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## TO DETERMINE THE MARKET VALUE OF WHEAT.

By Prof. F. Noble, in *Papenheim's Maeller Zeitung*.

IN the determination of the value of wheat flour, the baker's main point is the baking quality, i. e., the production of a light, porous and voluminous bread. The quality of the flour depends upon the quantity and elasticity of the gluten. The quantity of the gluten varies between 15 and 40 per cent. Wheat flours from which gluten cannot be obtained by washing are very rare. This gluten, however, is with different varieties of wheat, of a very varying quality. Our millers distinguish between "long" and "short" gluten, according to the elasticity displayed, and claim inferior baking qualities for the flour containing "short" gluten. Quantity and elasticity of the gluten are the two factors, which, combined, give us the necessary means to determine the baking qualities of flour. Not in such a way, however, that a flour richest in highly elastic gluten should represent the highest baking qualities, for, according to the statements of competent millers, we have such a flour which produces a heavy, non-porous bread; a happy medium in this, like in most of things, gives the best results. For the market price of wheat such a restriction, however, is immaterial. As most of the flours used are mixed from different wheats, a product very rich in gluten can be mixed with another of poorer quality, and the resulting flour will produce a maximum quantity, as well as quality of bread. Thus the market value of flour as well as of wheat, rises and falls with the quantity and elasticity of the gluten which it contains.

The unequal mechanical action of the gluten from different flours is probably due to the difference in the percentages of the various nitrogenous combinations which make up the gluten. Thus we can obtain gliadin, mucidin and gluten-caseine in a pure state, all highly elastic, and these form, beyond a doubt, the basis of the elasticity of the gluten; while the gluten-fibrin, another constituent of the gluten, is brittle and perhaps of a negative function. The vegetable albumen is most likely lost during the washing process, at least we have found a considerable loss in undetermined nitrogenous matters during the washing of the gluten, as compared with the total quantity of flour. This is but one of the questions which need additional investigation. But in spite of our deficient knowledge, our investigations have demonstrated the possibility of obtaining, after a little practice, corresponding quantities of gluten from samples of the same flour, making fairly reliable, though not perfect determinations.

To determine in an efficient manner the baking quality of the gluten, a definite portion is placed into a small cylinder, which is then immersed into an oil bath and baked for 20 minutes at a temperature of 392 deg. Fahr. The gluten will expand during this process according to its elasticity, and the resulting volume is a good measure of the baking quality of the flour from which the gluten was obtained. The more general introduction of such an instrument would be of the greatest advantage. To the farmer it will indicate in a fair measure the quality and also the market value of his wheat. The miller will find it more useful still. We all know that the prices of wheat

differ, and that the baking quality is the leading factor in the determination of such prices, which vary on the market as much as 20 per cent. Thus the soft, English wheats, yielding abundant crops, are less valued than the flinty Hungarian and South Russian wheats, which command a higher price because they contain a larger percentage of gluten, and produce a better quantity as well as quality of bread. The variety of the wheat alone, however, is apt to be misleading. Soil, cultivation of soil, meteorological conditions are efficient factors to determine the quality of the product. So at the experimental farm at Tharand a lot of "square head" wheat was cultivated in 1882 which produced a flour far exceeding in baking qualities any other flour ever produced from this particular variety. Hence this small lot really had a far higher value than the markets gave to the average product. A similar experience was recorded for the Australian variety known as "Pearl," which, when properly cultivated, yielded a product far superior to that found on the markets. The value of the determination of the quality of wheat by means of the gluten test is so clearly demonstrated, that the producer should try to habituate himself to personal investigations in this branch, obviating his dependence upon the service of others and basing his knowledge upon personal work.

## A TREATISE ON FLOUR.

IV.

Analyses made from sprouted cereals revealed the fact that flour made from such grains produces less gluten in a dough, in proportion to the time that has elapsed since its preparation. Since then it has been demonstrated that gluten, when in contact with softened bran, loses its consistency quite rapidly. These observations resulted in the following line of experiments:

1. 100 grammes old bran and 250 g. cold water were mixed by hand during ten minutes, and the excess of water expressed through a cloth. This fluid was then used for the preparation of a dough from flour of the finest quality. After a rest of half an hour the gluten obtained from one-half of the dough amounted to 22 per cent., while the other half, after two hours, yielded only 14 per cent. With pure water and the same flour the results after corresponding intervals of time, were 28 and 29 per cent.

2. 100 g. fresh bran and 250 g. cold water were mixed during 10 minutes, and the fluid expressed. One part of this fluid was filtered and used for the preparation of a dough with a flour of above quality. The gluten obtained after half an hour amounted to 28 per cent., after five hours, 24 per cent. A dough made from same flour with the remaining unfiltered fluid gave after the lapse of corresponding intervals, 23 and 9 per cent. of gluten. Similar experiments with different brans and different flours, gave similar results, but the bran from hard wheats exhibited a lesser tendency to break up the consistency of the gluten than that from soft wheat. The acid contained in the fluid expressed from the bran cannot be looked upon as the cause of these changes, because the acidity is the same in the filtered as well as in the unfiltered water.

3. If the bran and water are allowed to remain in a mixture during 15 or 20 hours,

the resulting fluid, although of a higher acidity, has a smaller action upon the gluten than that expressed after 10 minutes.

4. The residue obtained by filtering, after a short maceration of bran and water, retains its full activity, even when dried in the air. In this manner a dough made from good flour produced, after five or six hours of rest, only minute quantities of gluten, when a few decigrammes of the dried residue had been added to the dough. A temperature of 77° F. is a great advantage for the success of these experiments. A drying of the surface of the dough was prevented by covering it with a damp cloth.

5. A sample of bran, slowly heated up to 212° F. and kept at this temperature for nine hours was mixed for a few minutes with water, and the fluid again pressed out. A part of this fluid was filtered, and a dough made with it, gave, after two hours, 27 per cent. gluten; while the unfiltered fluid produced after the same time of rest, only 13 per cent. gluten.

## ONE BUSHEL OF WHEAT.

Mr. John K. MacIver, Secretary to the Detroit Board of Trade, contributes the following to the "Post" of that city.

Early in the month of October the acting consul for Belgium came to me with a letter from his consul-general asking for the information of his government certain questions relating to the cost of wheat and methods of production. I might, of course, have given a rough estimate off-hand, for it is commonly asserted that it takes twelve bushels at \$1 per bushel to pay the cost of raising an acre of wheat, but I considered the question as altogether too important to be treated in that manner. I am persuaded that this country can deliver food products of all kinds in Western Europe cheaper than they can be produced there or imported from any other country, and I am as fully persuaded that it is for the interest of our producers that this fact should be made known as widely as possible. Some consideration given to the subject has led me to the belief that farmer's clubs and agricultural journals are disposed rather to magnify cost in the hope that this will in some way influence the foreign consumer. We have no monopoly of supply in any single article of food, and it is perfectly immaterial to the consumer whether we are losing money on our wheat or not, if he can buy for less money elsewhere. The best policy would seem to be to figure cost as low as possible, consistent with truth, that wheat-growers in Western Europe may be advised of the hopelessness of competition and reduce their wheat acreage. If convincing proof be given that the United States can, in a series of years, ship wheat from the Atlantic seaboard within a certain figure, the result might be a reduction from the wheat area in England of 1,000,000 acres and 5,000,000 acres in France, and this would leave 115,000,000 bushels in addition to present requirements to be supplied by this country and other producers, quite enough to save us from panic prices for many years to come.

## COST OF EACH SEPARATE CROP.

Prof. Brewer, special agent United States census of 1880, in his report on "Cereal Productions," concludes that it is practically

impossible to give the precise data as to the cost of each separate crop in mixed agriculture, the real difficulty lying, not in defective and conflicting answers to schedule questions, but in the correlation of the crops. The great and inherent difficulties of the subject may be estimated from the fact that though it has been of the highest importance to the British and Indian governments to ascertain the cost of producing wheat in India, the nearest they have yet got to a definite answer is that it takes two-thirds of the gross produce to pay the cost of production.

Notwithstanding all difficulties, it seemed to me that one or two inquirers confining their investigations to a comparatively limited area, and having facilities for checking, comparing and investigating conflicting statements, should be able to get very near the truth.

## THE BASIS FOR ESTIMATES.

The Detroit "Post" has been for years a collector of Michigan agricultural statistics, has secured a valuable list of correspondents, and is widely known as an accurate compiler, and I had, from my position as Secretary of the Board of Trade, opportunity to secure, through the members of the association, the co-operation and assistance of grain dealers and farmers. Upon consultation it was decided that a joint circular might elicit replies which would enable us to make a reasonably close approximation to the truth. Our joint experience told us that a too elaborate schedule would have the effect of deterring many from attempting reply, and the questions were therefore made as simple as possible.

The replies received, though fewer in number than we would have desired, are, for the most part, excellent in quality, and furnish many details of the operations of wheat raising which are of great value in framing an estimate.

As it appears that the Secretary of State of Michigan has in view the preparation of an estimate of the cost of raising various crops, it seems advisable to publish in full the circular letter and accompanying questions, that where the following analysis may show uncertainty arising from want of precision in the question, future schedules may remedy the defect and future correspondents may see the need of supplying the compilers with ample material to arrive at just conclusions.

## THE CIRCULAR.

DETROIT, Oct. 22, 1884.

SIR—Many attempts have recently been made in various wheat producing countries to arrive at some estimate of the cost of production. In endeavoring to frame estimates it seems necessary, for correct comparison, to divide the cost of production into three heads.

1. Rent of land (which in the United States would be interest on the value of improved land in farm.)

2. Maintenance of the farmer and interest on the capital invested in stock, implements, etc., cost of fertilizers purchased, annual repairs to fences and buildings.

3. Cost of labor (and in the United States this can only be arrived at by assuming that the labor is hired at current rates.)

The questions sent herewith have been framed with a view to making an estimate of the average cost of production of an acre of wheat in Michigan, which may be compared with the cost in European countries and in India, where the cost is composed of the three elements as above. The answers received will be carefully compiled, and if a sufficient number are received to frame an estimate having any resemblance of accuracy, the result will be published in the Detroit "Post."

The immediate cause of the inquiry is a request for information from the Detroit Board of Trade by the consul general of Belgium (through the consul here),

at the desire of his government, but it is thought that the information would be of general interest.

Any further information relating to the question of cost will be thankfully received and will have due consideration. Should this circular fall into the hands of any person who cannot answer the questions of his personal knowledge, it will be esteemed a favor if he will hand it to some well-informed farmer in his neighborhood.

#### ITEMS FORMING COST OF AN ACRE OF WHEAT.

Plowing—What is the cost of a man, horses and plow for one day, with board of man and keep of horses? Same without board and keep? How many acres will one team plow in a day?

Seed—How many bushels are sown to an acre?

Seeding and Harrowing—Cost per day of man and team with board and keep? How many acres will man and team seed and harrow in one day?

Reaping and Binding—If work is done per acre, how much (cost of twine included)? If machine is hired, how much per day, with board and keep? Same without board and keep? How many acres per day will machine cut?

Stacking and Carrying to Barn—Cost per acre or per bushel?

Threshing—If per bushel how much? If machine is hired, how much per day, with board and keep? Same without board and keep? How many bushels per day will machine thresh?

Hauling to Railway from Farm—What would be the cost per bushel if by hired team?

Value of Farm—Total number of acres in farm? Deduct swamp and waste land and forest; balance, tilled, meadow, pasture, orchards, etc.? Value of farm, including land, fences and buildings?

Value of Stock, Implements, Etc.—Total value of stock of all kinds? Value of implements?

Annual Repairs, Etc.—Average annual cost of fertilizers purchased? Average annual cost for repairs to fences, buildings, etc.?

Transportation—Freight per bushel from nearest railway station to Detroit? Charges per bushel in the country if wheat is shipped to Detroit on farmer's account?

#### DIGESTING THE ANSWERS.

The replies were sorted according to the alphabetical arrangement of counties used in the "Farm Statistics" of Michigan—each return was then given a line to itself in a tabulated statement, and the average production of the county per acre for the five years 1878 to 1882 was calculated as the first step. Each item of cost was then reduced to cents and hundredths per bushel and placed in its proper column.

This method, though laborious, brought out very clearly the difference between the various replies, and greatly aided in reconciling them. When, therefore, I saw that one correspondent said that man and team would harrow 10 acres per day and others said they would do  $\frac{2}{3}$  of an acre, 1.47 acres and 2 acres, it was plain that they were talking of different things. The first meant simply that a team would harrow 10 acres per day in his vicinity and the last doubtless meant that if the team cost \$2.50 per day, the cost of rolling, cultivating, harrowing and drilling an acre would be \$1.25, or equal to two acres of completed work for the man and team. This is clearly explained in some of the replies, as will be seen under the head of "Seeding and Harrowing."

#### COUNTIES HEARD FROM.

The returns received are from eighteen counties which yielded in 1882, 17,878,525 bushels, or nearly 55 per cent. of the whole wheat production of the state.

The following statement shows the average production of each of these counties for the five years, 1878 to 1882, and the average of the whole eighteen for five years compared with the average of the state for the same period:

Berrien.....	16	Kent.....	17½
Calhoun.....	18	Lenawee.....	19½
Clinton.....	19½	Macomb.....	17
Eaton.....	17½	Montcalm.....	17
Hillsdale.....	17	Oakland.....	17½
Ingham.....	18½	St. Clair.....	14½
Ionia.....	19½	Tuscola.....	17½
Jackson.....	19	Van Buren.....	15
Kalamazoo.....	17	Washtenaw.....	21½
Average, 18 counties, 5 years, 17.72 bushels.			
Average, state, 5 years, 17.36.			

#### PLOWING.

In this item I have taken the cost of a hired plow with the cost of boarding man and feeding horses added. The average, according to the returns, is \$2.92 per day, of which 80 cents is the average cost for

board of man and feed of a span of horses, leaving \$2.12 as the average hire of team. The average plowed per day is  $1\frac{7}{10}$  acres; the average cost per acre being \$1.68 with board and keep and \$1.22 for team only. The average cost per bushel on an average production of 17.72 bushels in the eighteen counties, would be  $9\frac{4}{10}$  cents per bushel, but the average recording to the replies is  $9\frac{8}{10}$  cents per bushel.

Several correspondents have sent complete estimates of cost calculated in their own way, and in these the cost per acre is put at \$2 and even \$2.50 for single plowing and \$3 for plowing twice.

In the census of 1880, page 54 of the volume on agriculture, is the following: "We may sum this up in a general way by saying that the returns for Illinois, Iowa, Missouri, Nebraska and Minnesota, place the breaking of original prairie by contract at from \$2 to \$4 per acre, \$2.50 per acre being perhaps the most common price; that the breaking of sod usually runs from \$1 to \$2 per acre, \$1.50 being perhaps the most common price, and for stubble or fallow \$1 to \$1.25 are more often returned than any other prices. In Indiana, Michigan and Kansas the prices range, as a whole, a little lower, perhaps about 25 cents per acre."

The cost of fallow will be treated separately, but under this head the correspondence between the census figures and those yielded by these returns is so close, that I will feel justified in giving in the summary \$1.68 as the cost per acre and  $9\frac{8}{10}$  cents as the cost per bushel.

#### SEED.

The quantity of seed sown will depend on whether the field is clear or has more or less stumps, whether it is sown with drill or broadcast, and in some degree on the size of the berry. All of these considerations have doubtless entered into the calculations of our correspondents, for the replies range from one to two bushels per acre, the majority of the replies giving an average, and the most common average being one and a half bushels per acre. The average obtained from my table is  $1\frac{6}{10}$ , so perhaps  $1\frac{6}{10}$  bushels at \$1 per bushel may be accepted as a conservative estimate for the eighteen counties, and this on the average production of the counties would give as cost of seed  $9\frac{8}{10}$  cent per bushel of wheat.

#### SEEDING AND HARROWING.

Under this head it is meant to include all the operations of the wheat field after the plowing, until it is seeded down, namely, use of roller, harrow, cultivator and drill. The cost of team per day with board and keep varies but little from the cost of a team for plowing (in a few cases being returned as less), but as the estimate is somewhat complicated I will assume \$3 per day as a fair figure.

From the returns, as well as from verbal inquiry, I find that it may be safe to assume that a roller will go over 14 acres per day on an average, a harrow 9, a cultivator 8 and a drill 10.

The cost, therefore, of each operation once would be per acre: Roller  $21\frac{4}{10}$  cents, harrow  $33\frac{1}{3}$  cents, cultivator  $37\frac{1}{2}$  cents, drill 30 cents. As the labor performed will vary with the condition of the field when the operations are commenced it becomes necessary to estimate the proportions of sod, fallow and stubble; and while this must be a matter of guess work, yet it will be perhaps not far from the truth if we say that one-half of the whole area will be sown on sod, one quarter on fallow and one quarter on stubble. The following are perhaps very nearly the operations in each case:

On sod—average:	Cents.
Rolling, once.....	21 43-100
Drilling, twice at $33\frac{1}{3}$ .....	66 66-100
Cultivator, once and a half at $37\frac{1}{2}$ .....	56 25-100
Drilling.....	30
Total.....	\$1 74 94-100

On fallow—average:	Cents.
Cultivator, twice at $37\frac{1}{2}$ .....	75
Drilling, twice at $33\frac{1}{3}$ .....	66 66-100
Drilling.....	30
Total.....	\$1 71 66-100
On stubble—average:	
Drilling, twice at $33\frac{1}{3}$ .....	0 66 66-100
Rolling, half at $21\frac{43}{100}$ .....	10 72-100
Drilling.....	30
Total.....	\$1 07 38-100

This gives as the average of the whole area \$1.58 per acre.

Many of our correspondents have simply stated the number of acres a drill or harrow would go over in a day, but many have entered into full details of the whole process. These range from 75 cents to \$3.71 per acre and average \$1.70. Leaving out the extreme low 75 cents and 90 cents and the extreme high \$3.71 and taking an average of the remainder, ranging from \$1.25 to \$2.25. I get \$1.65 per acre. The correspondence between the figures arrived at by these processes is so close that perhaps \$1.70 per acre or (on the average production as before) 9.59 cents per bushel, may be accepted as very near the truth.

#### THE SUMMER FALLOW.

As this letter may be circulated where Michigan farming is unknown, it may be well to sketch roughly the history of a summer fallow field.

First Year—Plow late in fall.

Second Year—Cultivate twice in spring and sow wheat in September.

Third Year—Sow grass seed in April, cut wheat in July and pasture sheep in August and September.

Fourth Year—Mow hay in June and July, and cut clover seed in September and October. If hay is good leave for second crop, if not break.

#### REAPING AND BINDING.

The replies given to this question range from 75 cents to \$2.50 per acre. The one seems as much too high as the other is too low, and the number of each about neutralize their effect on the total. The most common figures are \$1.25 to \$1.50, and the average is  $1\frac{42}{100}$  per acre. On an average production of  $17\frac{7}{10}$  bushels this gives  $8\frac{4}{10}$  cents per bushel. The tabulation of the returns gives  $7\frac{8}{10}$  cents per bushel. The average number of acres a machine will cut is found to be  $10\frac{1}{2}$  per day.

Several of the replies give the details of cost, viz:

Machine (self binder), twine, board and keep....	\$21.00
Average cut per day, 12 to 14 acres. Or:	
Man, machine and three horses.....	\$10.00
Wire or twine.....	4.00
Keep.....	75
Board.....	50
Total.....	\$15.25

Average cut per day, 10 acres,  $1\frac{52}{100}$  per acre.

Some of the complete estimates made up in the correspondents' own way give: "Cutting, binding and hauling, \$2;" "harvesting, \$1.50, hauling 50 cents—\$2;" "Reaping, \$2.25." The cost under this head may fairly be taken at \$1.50 per acre, and on the average production of 5 years, as before,  $8\frac{4}{10}$  cent per bushel.

#### STACKING OR CARRYING TO BARN.

The replies range from 40 cents and 60 cents per acre to \$1.70 and \$1.75, the most common being 75 cents, and the average found is 80 cents, or  $4\frac{51}{100}$  cents per bushel.

One estimator computes the cost in this way—for ten acres:

Two men shocking one day.....	\$ 4
Five men and two teams stacking one day.....	13
	\$17

Or \$1.70 per acre. The majority of our correspondents seem to be against so high an estimate as this.

#### THRESHING.

The estimates range from 5 to 10 cents per bushel, and in one case reach  $12\frac{1}{2}$  cents. The most common is 7 cents; and

that is also the average of the whole as tabulated. A correspondent in Lenawee county, to whom we are indebted for much valuable information, figures the cost as follows:

Machine with four hands.....	\$28
Fourteen men.....	21
Board of eighteen men.....	9
Keep of four horses.....	1
Fuel.....	3
	\$62

Threshed in the day 800 bushels at  $7\frac{3}{4}$  cents per bushel. Another very careful estimator, who has kept an account for twenty-one years, places the cost of threshing at 8 cents per bushel, but I infer that he means "this year." Against these high estimates we have to place one bearing marks of equal care from a gentleman who says that, under very favorable circumstances, he threshed and delivered at railroad depot for 6 cents a bushel, including hands, machine and haul.

Seven cents per bushel or \$1.24 per acre would therefore seem a fair estimate of the average cost in the eighteen counties for five years.

#### HAULING FROM FARM TO RAILROAD.

The average obtained from the replies is 3 cents per bushel or about 53 cents an acre.

#### TOTAL COST OF WHEAT DELIVERED AT RAILROAD.

	Per acre.	Per bushel.
Plowing.....	\$1.68	9.63
Seed.....	1.60	9.08
All cultivation from plowing till seed is sown.....	1.70	9.59
Reaping and binding.....	1.50	8.47
Stacking or carrying to barn.....	80	4.50
Threshing.....	1.24	7.00
Hauling from farm to railroad.....	53	3.00
	\$9.05	51.22

#### ANNUAL REPAIRS, ETC.

The annual repairs to buildings and fences will probably not exceed one-half of 1 per cent. of the value of the farm, or say 30 cents per acre. The value of fertilizers purchased is a mere trifle or about 4 cents per acre of improved land, according to the census reports. Where farm yard manure is used the cost of hauling and spreading will be about \$1.50 per acre, of which not more than one-third is fairly chargeable to the wheat crop, and certainly not over half of the wheat land in the eighteen counties would be thus manured.

A total of 59 cents per acre under this head would therefore seem a liberal allowance.

#### RENT.

There is a wide difference between the figures in the census reports and of those in the "Farm Statistics of Michigan," but using the census figures the average value of improved land (including land, fences and buildings, and adding value of implements and machinery) would be \$62 per acre. The majority of our correspondents agree upon \$60 as a fair average, and it must be remembered that in estimating cost of work we have supposed implements to be hired, and that the owner of the implements or machinery was being paid a price to cover repairs and renewal. Sixty dollars at 4 per cent. interest would give \$2.40 yearly rent, and if we say that one-fourth of the wheat area is fallow, and that the wheat should bear half of a year's rent of the land while fallowed, we must add one-eighth of the whole, or 30 cents per acre—making the rent \$2.70.

The greater number of our correspondents think 6 and 7 per cent. a fair interest, but it should be considered that \$60 an acre is the average value of the improved land only, leaving 32 per cent. of the total area of the farms in the eighteen counties rent free.

It seems pretty generally admitted that the value of farms in Michigan has advanced in times of extraordinary prosperity and has never declined during periods of depression.

Many think that the value of the straw and the natural increase in the value of the land are quite sufficient to offset the rent paid by European and Indian farmers and that the item of rent should be left out in computing cost.

#### TRANSPORTATION AND CHARGES.

From our returns and from inquiry made at the railroad offices I find that 6 cents per bushel will be about the average freight to Detroit and 2 cents will cover all charges in the country. For Detroit elevator and charges 2 cents more must be added.

Total cost of a bushel of wheat to deliver on contract in Detroit:

	Per acre.	Per bushel.
All labor as above.....	\$9.05	\$0 51 22-100
Annual repairs, manuring, etc....	59	3 33-100
Rent.....	2.70	15 23-100
Transportation and charges.....	1.77	10
Total .....	\$14.11	\$0 79 78-100

#### "INTENSITY OF PRODUCTION."

Does it pay to "farm better?"

The original questions were not framed to procure information on this point, nor has sufficient information been voluntarily offered to justify any positive statement, but I present one estimate of high cultivation and high production as a hint to future inquirers:

Plowing.....	\$2.50
Seed.....	1.75
Seeding, etc.....	3.71
Reaping.....	2.25
Stacking, etc.....	1.75
Threshing.....	2.22
Hauling to Railway.....	1.39
Hauling and spreading manure.....	1.50
Transportation to Detroit.....	1.33
Total.....	\$18.40
Add rent on \$70 per acre in Washtenaw; also proportion of rent for fallow.....	\$3.50
Detroit charges.....	56
Total.....	\$22.46

The average production of this farm for twenty-one years past has been accurately kept and is found to be twenty-seven and three-quarters bushels per acre, and this would make the cost nearly 81 cents per bushel. If I had used the average value of \$60 per acre the cost would have been 78 cents per bushel, and the question arises whether the increased value of the land is not due solely to its producing more than the average crop.

I have just a word to say regarding the spirit in which this investigation has been conducted. I have been so anxious to avoid being biased by preconceived theories that I did not work out any totals and dealt with each item separately; and until I made the final additions I had no idea of what the cost per bushel or per acre would come to. Your readers will kindly remember that the endeavor is to arrive at the average cost per bushel in the state of Michigan.

#### AVERAGE PRICES IN DETROIT.

The average price for spot No. 1 white wheat in Detroit for the eight years 1876 to 1883 inclusive, was \$1.20. I have no means of ascertaining the proportions of the different grades for the first half of the period, but perhaps a reduction of 5 cents per bushel would be a fair average on the whole. This leaves \$1.15 realized. Cost, 79 3/4 cents; profit, 35 1/4 cents.

I might go on to make comparisons with estimates of cost in other countries, but prefer to wait the results of the official inquiry being made by the state department at Lansing. Besides, this letter is too long already.

#### CORN SMUT.

There are differences of opinion, says an exchange, about the bad effects of corn smut on cattle when it is eaten by them. Some claim that it is a rank poison to domestic animals, and attribute the impaction of the food in the stomach to the influence of smut. Others claim that cattle can eat any quantity of corn smut without the least harm. And yet when smut appears on rye

or grass it has been decided that it is the cause of the fatal ergotism which attacked so many herds last winter. But it is important to know what smut is. Prof. Bessey, one of the most reliable scientists, gives a botanic and microscopic examination of it, as follows:

The disease of Indian corn is well known to be due to a minute parasitic plant which gains access to the corn plant early in the life of the latter. Careful microscopical examinations show the parasitic growths to be present even in the lower joints of the corn, and they have been seen in all the intermediate parts. The parasite grows in the form of very minute slender threads, which penetrate the tissues of the corn and thereby gain nourishment for growth. The threads grow until they finally reach the young kernels, where they find such an abundance of nourishment that they burst out into the too well known smutty growths, which are so common some seasons. Now these smutty growths are the fruiting places of the parasite. Cut open such a growth when it is young, and you will find it to be white and a fibrous structure. A little later it begins to show dark streaks, and still later it begins to dissolve into a black, inky slime. The water soon evaporates from this slime and leaves a powdery mass, which puffs out and blows away with the slightest jar.

This powder is made up of countless myriads of little black balls, called spores, which serve to reproduce these plants, as seed reproduces the higher plants. Now, every smutted ear left in the field is a seed-bed for the production of more smut the next year. It has been shown by experience, as well as by direct experiment, that there is always more smut in those fields where there had been smut the year before. The lesson is, therefore, obvious, gather and burn all smutted ears.

#### COST OF GROWING WHEAT IN THE WEST.

Careful reports from the wheat-growing sections of Minnesota and Dakota, indicate that the large yield of the present year on a very large acreage is not an unmixed blessing to the farmer, whether he is an actual settler or a so-called "bonanza" wheat raiser on thousands of acres. In Minnesota the yield is estimated at 47,000,000 bushels, which commands an average price of 63 cts. in Minneapolis and St. Paul. The correspondent has carefully examined the estimates of cost and the conclusion he reaches is that for a term of ten years \$9 an acre will not more than cover the cost for an average yield of fifteen bushels. This is on the smaller farms, where all the labor, including that of the owner, is estimated on the basis of weekly or monthly wages. This is an average cost of sixty cents to the bushel. On the larger farms of the more favored Red River Valley the production in some cases has averaged twenty bushels, at a cost of \$8 to the acre. The net average cost of a bushel of wheat taking this peculiarly favored region as a whole, is estimated at forty-eight cents. But this does not carry the product beyond the land on which it was raised. It must find its way to market. The average freight rates for hauling wheat from points two hundred miles west or north of the market cities is twelve cents per bushel, to which must be added three cents more for elevator and other handling charges, thus bringing the average cost of wheat up to sixty-three cents, or just the price paid for No. 2 grade, to which the bulk of the product belongs.

To add to the cost or rather to reduce the selling prices the universal grievance concerning the grading of product must be considered. This has become the province of the railway and elevator managers who practically control the market. Whatever they are or however managed the gen-

eral impression is that the transportation companies fix both the price and the grade. With the cheap freight between the Missouri river and the Atlantic coast, twelve cents for transporting sixty pounds of freight an average distance of two hundred miles is surely an exorbitant one, which shows how thoroughly competition has reduced freight charges to a reasonable minimum.

When it is borne in mind that wheat is the staple product of the country west of the Mississippi and north of Iowa, cheap lands and great fertility are not likely, in the long run, to attract as large immigration to those sections during the next ten years as during the same period just past. No marked reduction in freight changes can be expected until active competition shall bring it, while the decline in the foreign demand for our wheat is not likely to raise the price to such a figure as shall make it the profitable business of former days. So far as the wheat-growing region is concerned this appears to be a very good time to say to the young man: "Don't go West."—Ex.

THE report of the commerce of Buffalo during the past year makes a bad showing as compared with the year preceding, and the "Courier" states that from a pecuniary point of view the year has been very unsatisfactory. The receipts by lake for the year 1884 were only 6,234,000 bushels, against 74,307,000 bushels in 1883, a decrease of 6,073,000 bushels. The shipments of grain by railroads from elevators connecting with railroads centering in Buffalo from January 1 to November 30, 1884, were 11,387,710 bushels, against 15,618,336 bushels for the same period of 1883, a loss of over 4,000,000 bushels. The shipments of grain by canal since the opening of navigation foot up 37,840,000 bushels, as compared with 42,350,000 bushels last year, a decrease of about 4,500,000 bushels. The number of boats cleared numbered 6,414, a decrease as compared with 1883 of 382. The lumber movement decreased by 28,000,000 feet. During the year but 136 barrels of petroleum were shipped, and not a barrel of pork or lard was sent by canal. The shipments of flaxseed declined about 30,000,000 pounds as compared with the year previous. The exports by lake from Buffalo to western ports show a large decline in salt and railroad iron, while coal shipments increased from 1,253,940 tons in 1883 to 1,363,610 tons in 1884.

In France last year there were 5,000 duels, in which one man was injured and a large number seriously frightened. The law ought to put a stop to this dreadful carnage.

#### SITUATIONS WANTED.

Advertisements under this head, 25 cents each insertion for 25 words, and 1 1/2 cents for each additional word. Cash with order. Three consecutive insertions will be given for the price of two.

#### WANTED IMMEDIATELY.

By a young married miller of seven years' experience in custom work. A situation as miller in some good mill. Am used to water and steam. Prefer Central New York. Address, A. L. WHEELER, Canastota, N. Y. 35

#### SITUATION WANTED.

By a man who has had fifteen years' experience in running grist and merchant flour mills. Address, Wm. H. WOLLERTON, McElhattan P. O., Clinton county, Penn. 411

## SPECIAL ADVERTISEMENTS.

Advertisements of Mills for Sale or Rent, Partners Wanted, Machines for Sale or Exchange, etc., etc., cost 1 1/2 cents per word for one insertion, or 4 cents per word for four insertions. No order taken for less than 50 cents for one insertion, or \$1 for four insertions. Cash must accompany the order. When replies are ordered sent care of this office, 10 cents must be added to pay postage.

#### A CHANCE.

A reasonably sure method of making money. Weekly paper free to investors. E. H. MASON, 285 S. Jefferson street, Chicago, Ill. 274

#### FOR SALE OR RENT.

A three run water mill in running order. Good machinery. Well located for merchant or custom work. Address, JANE POPE, Cortland, N. Y. 36

#### CHEAP! CHEAP!! CHEAP!!!

I will send one "Yale" vertical mill, style B. 12 inch burrs, all iron frame, entirely new, never having been used, very, very cheap for cash. Address "Bargain" care THE MILLING WORLD, Buffalo, N. Y.

#### YOU CAN BUY THESE CHEAP.

Three McCully Corn Cob Crushers. The above articles are brand new, in perfect condition, just as they left the factories, and will be sold very cheap for cash. Address S. 30, care THE MILLING WORLD, Buffalo, N. Y. 17

#### CUSTOM MILL FOR SALE.

A mill in a good neighborhood, for all kinds of custom work, consisting of five burrs, upright and circular saws, with other machinery, all in good order, turned by two overshot and one turbine wheels. Terms easy. Apply to C. W. DOWNEY, Administrator, Taylortown, Loudoun county, Va. 86

#### FOR SALE CHEAP.

One 6-horse power engine and 10-horse power boiler, all complete, price, \$350; one 8-horse power engine and 10-horse power boiler, price, \$375; one 10-horse power Portable complete, price, \$350; one 10-horse power Russell Traction, price, \$500; one 4-horse power vertical engine, price, \$120. Call or address for particulars EZRA F. LANDIS, Lancaster, Pa. 262

#### FOR SALE.

A four-run New Process water power flouring mill, and 160 acres of very choice land; 40 acres of young timber. Situated in Colfax county, Neb. Mill in good repair. A never-failing water power. All facilities for making first class flour. A good chance to do a first-class paying business. Owners desire to go into other business. This property will be sold at half its cost. Address, J. A. GRIMISON, Schuyler, Colfax county, Neb. 171f



#### HOW DOES THIS SUIT?

"Cooch's Bridge, Del., Aug. 25, '84.  
"Messrs. Kreider, Campbell & Co.,  
"Philadelphia, Pa.

"Gentlemen: Your machine was sent here against an —, on condition that we should keep the best, and we tried each machine, and are frank to say that if your machine cost us \$500 and the other was offered us as a present we should take yours, as we cannot find a fault with it. The above machine has a capacity of 50 bushels per hour."

We think best not to publish name, but it will be given upon application. Address, KREIDER, CAMPBELL & CO. Philadelphia, Pa.

#### BOLTING CLOTH.

Do not order your cloth until you have conferred with us. It will pay you, both in point of quality and price. We are prepared with special facilities for this work. Write us before you order.

CASE MANUFACTURING CO.,  
Columbus, Ohio.

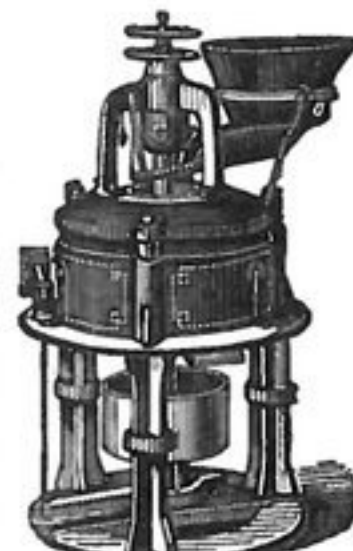
Office and Factory, 5th Street, north of Naughten.

## Buckwheat Refiners & Portable Mills



BREWSTER'S CELEBRATED  
Buckwheat Refiner  
Is the only machine  
whereby the greatest  
yields of  
PURE, WHITE  
SHARP FLOUR  
can be obtained.  
The only reliable, practical  
and durable machine  
IN THE WORLD.

THE POSITIVE ADJUSTMENT  
AND AUTOMATIC  
MIDDINGS MILL  
Is Strictly Self-Protecting  
The Best Adjustment in  
the World.  
And the only  
Perfect Granulator  
Grinds Cool, Self-Oiling, Great  
Saving of Power.  
Simplicity and Durability  
Combined.



Satisfaction Guaranteed on all our Goods. Send for Descriptive Circular, giving Prices, Sizes, Terms, etc.

BREWSTER BROS. & CO. Unadilla, N. Y.



PUBLISHED EVERY THURSDAY BY  
**THE AMERICAN INDUSTRY PRESS**  
 (LIMITED.)

OFFICES, LEWIS BLOCK, SWAN STREET,  
 BUFFALO, N. Y.

G. B. DOUGLAS, - - Managing Editor.  
 THOS. McFAUL, - - General Agent.

#### SUBSCRIPTION.

In the United States and Canada, postage prepaid, \$1.50 Per Year, in advance; can be remitted by Postal order, registered letter, or New York Exchange. If currency is enclosed in unregistered letter, it must be at sender's risk.

To all Foreign Countries embraced in the General Postal Union, \$2.25 Per Year, in advance.

Subscribers can have the mailing address of their paper changed as often as they desire. Send both old and new addresses. Those who fail to receive their papers promptly, will please notify at once.

#### ADVERTISING.

Card of Rates sent promptly on application. Orders for new advertisements should reach this office on Tuesday morning, to insure insertion in the week's issue. Changes for current advertisements should be sent so as to reach this office Saturdays.

#### EDITOR'S ANNOUNCEMENT.

Correspondence is invited from millers and millwrights on any subject pertaining to any branch of milling or the grain and flour trade.

Correspondents must give their full name and address, not necessarily for publication, but as a guarantee of good faith.

This paper has no connection with any manufacturing or mill furnishing business. Its editorial opinions cannot and will not be influenced by a bestowal or refusal of patronage. It has nothing for sale, but its space to advertisers and itself to subscribers.

Entered at the Post Office, at Buffalo, N. Y., as mail matter of second-class.

#### MILLERS' ASSOCIATIONS.

NATIONAL.....S. H. Seamans, Sec'y., Milwaukee, Wis.  
 CALIFORNIA.....F. J. Parsons, Sec'y., Oakland.  
 ILLINOIS.....C. H. Seybt, Sec'y., Highland.  
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#### OUR CLUBBING LIST.

**NOTE**—You can save money by availing yourself of the following offers. You can please every member of your family by accepting one or more of the following offers. To save money, and at the same time make the family happy, ought to be the main object of every married man's life. See how you can do this.

#### Take these for Yourself.

THE MILLING WORLD, per year.....\$1.50  
 WITH  
 The Builder and Woodworker.....(\$1.00 per year) 2.00  
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 Mechanical Engineer.....( 2.00 " ) 3.00  
 American Agriculturist.....( 1.50 " ) 2.50  
 The Country Gentleman.....( 2.50 " ) 3.50

#### Take these for your Family.

THE MILLING WORLD, per year.....\$1.50  
 WITH  
 Harper's Magazine.....(\$4.00 per year) 4.50  
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 The Century.....( 4.00 " ) 4.50  
 Frank Leslie's Illus. Newspaper.....( 4.00 " ) 4.50  
 Frank Leslie's Popular Monthly.....( 2.50 " ) 3.50

#### Take these for your Children.

THE MILLING WORLD, per year.....\$1.50  
 WITH  
 St. Nicholas.....(\$3.00 per year) 4.00  
 Harper's Young People.....( 2.00 " ) 3.00

Readers of "The Milling World" will confer a favor upon the publishers, and derive material benefit themselves, by mentioning this paper when opening correspondence with advertisers. Drop us a postal card when you have written to an advertiser, give us his name, and then we will put you in the way of getting the benefit. Don't forget this.

#### OVERPRODUCTION OF WHEAT.

THERE are not wanting men who believeth is country will never be displaced as the "Granary of the World." While it may be, possibly is, true that there are certain essential elements in American wheats which give them a high value for admixture with wheats of foreign growth, it is not impossible that under improved systems of culture, in countries whence competition with the United States may be anticipated, the elements which make our wheats desirable may be secured. We do not believe, however, that these properties of American

wheats are sufficiently valuable to hold demand, if competition in prices exist.

The growth of our wheat culture has been really marvelous; it has also been of a profitable nature, but it is not impossible that it has been overdone. It is quite true that our ability to export wheat has, in the past few years, brought immense sums of money to this country, but it can hardly be claimed that the conditions which have in the past enabled us to export so largely of our surplus, at remunerative prices, will always continue with us. Indeed the depression which prices have for the past several months experienced plainly indicate that American wheat values are not wholly regulated by home desires. If we continue to increase our wheat area, we must decrease the cost of production. Can this be done? It is asserted in the western wheat growing states that the cost of producing a bushel of wheat ranges from thirty-five to fifty-five cents. The latter figure is in all probability, in many sections much too high, while it would seem to be true also that the first is too low. If forty-five cents were taken as the mean cost, it is evident that little if any profit would accrue to the producer at current market quotations. It would be quite advantageous, were it possible, to procure the precise cost of production in the western wheat growing states, but as this is not obtainable we must accept conjecture as a basis from which conclusions may be drawn.

As the country advances in wealth, farm values appreciate, and this adds to the cost of production. In other words as our farm lands advance in money value, interest charges thereupon are advanced, so that a larger revenue is required from the products if profit is obtained from their cultivation. Increased revenue may be obtained in two ways. The improvement of cultivation will increase yield. This however will add to cost of product, so that the increase must be sufficiently enlarged to more than overcome the additional cost of production. It must be obvious, however, that were all wheat producers to adopt systems of high cultivation, any increase in yield would tend to the lower market value of the whole product; that is any increase above actual home requirements, would have the effect of arbitrarily fixing the value of the entire product by what the surplus would command in the markets of the world. If we pursue present methods of cultivation, we must, if we desire to fix a remunerative price on our product, decrease the area of growth, and if improved systems of culture, permit of increased product, then we must still further curtail the area of cultivation.

The other way open to us is to increase the number of consumers at home. This is being quite steadily done, and in view of the constant cry of over-production in wheat and demand for curtailment of the grain culture in the United States, it is a matter of interest to discover the ratio at which the agricultural population has increased or decreased in comparison with the manufacturing population. According to the census of 1870 and 1880, there has been a decrease in the numbers of the cultivators of the soil from 47.35 per cent. of the total population in 1870, to 44.1 per cent. in 1880. During the same period the number of people engaged in the manufacturing interests of the country, have increased from 21.65 per cent. in 1870, to 23.4 per cent. in 1880. In a country which offers such remarkable advantages to wheat farmers as the United States, it is but natural that the cultivation of the soil should greatly exceed other industries in the early development of the country. After a while, however, the necessity for other than agricultural pursuits is felt, and additional resources of the country are developed as the population increases, and thus the so-called

over-production in breadstuffs will limit itself in a natural manner as time progresses.

WE are quite accustomed to hear many peculiarities attributed to the action of the moon in various parts of the country. An unlimited number of people are, for instance, firmly convinced that the moon makes the weather. Sowing, planting, castration of animals, etc., are supposed to be governed by the different phases of the moon; the human hair will grow again more rapidly if it is cut at a certain phase of the moon than when cut at another time; and so on a long list of conditions, extending from infancy to old age, can be enumerated, upon which the poor innocent moon is supposed to exert some influence or other. The latest wrinkle in this line comes to us from Irwin county, Ga., where a mill stream is said to be governed by the moon during the dry season to such an extent that it increases its flow as the moon grows, attains its maximum at full, and runs dry toward new moon. Whether Dorminey's mill, situated on that stream, according to the report, uses steam power during the "dry" phases of the moon, we are not told; neither are we enlightened on the question how the moon uses her influence during rainy seasons. It is to be hoped that some competent observer in that vicinity will explain the phenomenon, if it does exist, and relieve the poor moon of additional duties.

STATISTICS gathered by the Treasury Department of the United States, illustrate the decline of the American merchant marine very forcibly. In 1857 the total import and export was valued at \$723,850,823, of which 70.5 per cent. was carried in American vessels. In 1862 the value was represented by \$435,710,714, and the percentage carried in our own vessels had decreased to 50. In 1870 the numbers are \$991,896,889 and 25.6 per cent.; in 1875, \$1,219,434,544 and 25.8 per cent.; in 1880, \$1,613,770,633 and 17.4 per cent., while in 1884 the value of imports and exports for the year ending June 30, was \$1,512,770,947, of which only 17.5 per cent. was carried in American vessels. Thus in a period of 27 years the value of import and export has increased by \$788,920,124, while the interest of the American shipping has dwindled down from 70.5 to 17.5 per cent. Indeed, these figures offer food enough for serious reflection.

BOHEMIAN millers are trying the same device against the Hungarian flours as the Irish millers recently advocated against the American product; "boycotting on patriotic principles." Thus one of the advocates of the Bohemian milling industry appeals to the women of the land, urging them not to purchase any foreign flour whatever, but to patronize the home industry. We do not believe that this appeal will be more useful than that of the Irish millers has been, for in times of peace, a battle between patriotism and the pocket book is generally decided in favor of the latter. Until the Bohemian millers are able to place as good a flour as the Hungarian, they must not be surprised to see the people purchase where they receive the largest returns for their money, and any appeal for help or patronage only reveals their inability to meet the growing competition on equal terms.

THE question whether the miller is to be allowed to bake bread or the baker allowed to sell flour, is yet under discussion in some parts of Austria. Some time ago the bakers complained that some of the smaller country mills were in the habit of baking and selling bread, thereby infringing upon their industry; but in spite of every effort made to prevent it, the government conceded the privilege of baking rye bread to the millers, who then tried to retaliate and sued the

bakers for selling flour, but this was decided in favor of the bakers. And now the curious spectacle arises that in some parts of the empire, the laws are interpreted in such a manner that the bakers are not permitted to sell flour and meal in small quantities, and the central government has to send out explanatory remarks of the existing laws to its subordinates in the provinces to prevent any further confusion.

THE question of subsidizing American steamship lines is again brought into prominence in many ways. Now ocean freights per steamer from New York to Liverpool have decreased from 15.22 cents per bushel in 1878 to 9.08 cents in 1883 as the annual average. If American vessels can carry the grain as cheap, let us have them by all means, but it would be an edifying spectacle, indeed, if our prospective subsidized steamships should charge higher freights than the foreign lines and the patriotic American grain and flour merchant would be morally obliged to patronize home industry by paying more for trans-Atlantic transportation.

THE necessity for a uniform grading of grain is felt more and more by all interested in the trade. According to the latest reports the Grain Receivers' Association of Chicago is laboring in this direction and trying to establish a uniform grade of inspection. Their present efforts are directed to corn which seems to be more in need of some form of systematic grading than the other grains as it has given rise to the most dissatisfaction during this season, and a meeting held last week expressed itself very strongly in favor of enforcing more care on the part of the inspectors.

IMMEDIATELY after the holidays there may be considerable weeping, wailing and gnashing of teeth among the retail trade of the country. Business for this season of the year is the reverse of satisfactory, and many who have held on grimly, in the hope of coming out even by reason of the trade ordinarily certain during this part of the year, will have to let go when the annual settlement day comes round. A little judicious leniency on the part of such creditors as may be in position to extend it will not be thrown away.

IN Philadelphia, if report is true, there is an undertaking establishment which, undoubtedly out of pure philanthropy, does business on the instalment plan, thus placing within the reach of people of moderate means the possibility of having their loved ones "planted" in elegant shape, without being sadly inconvenienced in "standing the racket." Thus do we progress in civilization, and thus does confidence in the honesty of humanity assert its growth.

FRANCE must be a healthy country in regard to food adulterations. A laboratory established in Paris a few years ago for the detection of such frauds, employs at present forty persons to test all the different samples sent in for analysis. Since the establishment of this central station, many of the leading cities have adopted a similar system, much to the benefit of the population.

THE State Millers Association of Illinois met at Springfield, on December 3. The discussion of the Millers' Mutual Benefit Association took up a fair share of the time at the session. The officers elected for the ensuing year are: D. R. Sparks, of Alton, President; E. C. Kreider, of Jacksonville, Vice President; C. H. Seybt, of Highland, Secretary.

THE closing grain prices in Chicago on Dec. 6, were the lowest of the year. Wheat for January closed at 72½c. and May at 70¾c., with predictions of still lower prices.

ESTABLISHED 1856.

**EUREKA GRAIN CLEANING MACHINERY | GENUINE DUFOUR BOLTING CLOTH****OVER 18,000 MACHINES IN USE.**

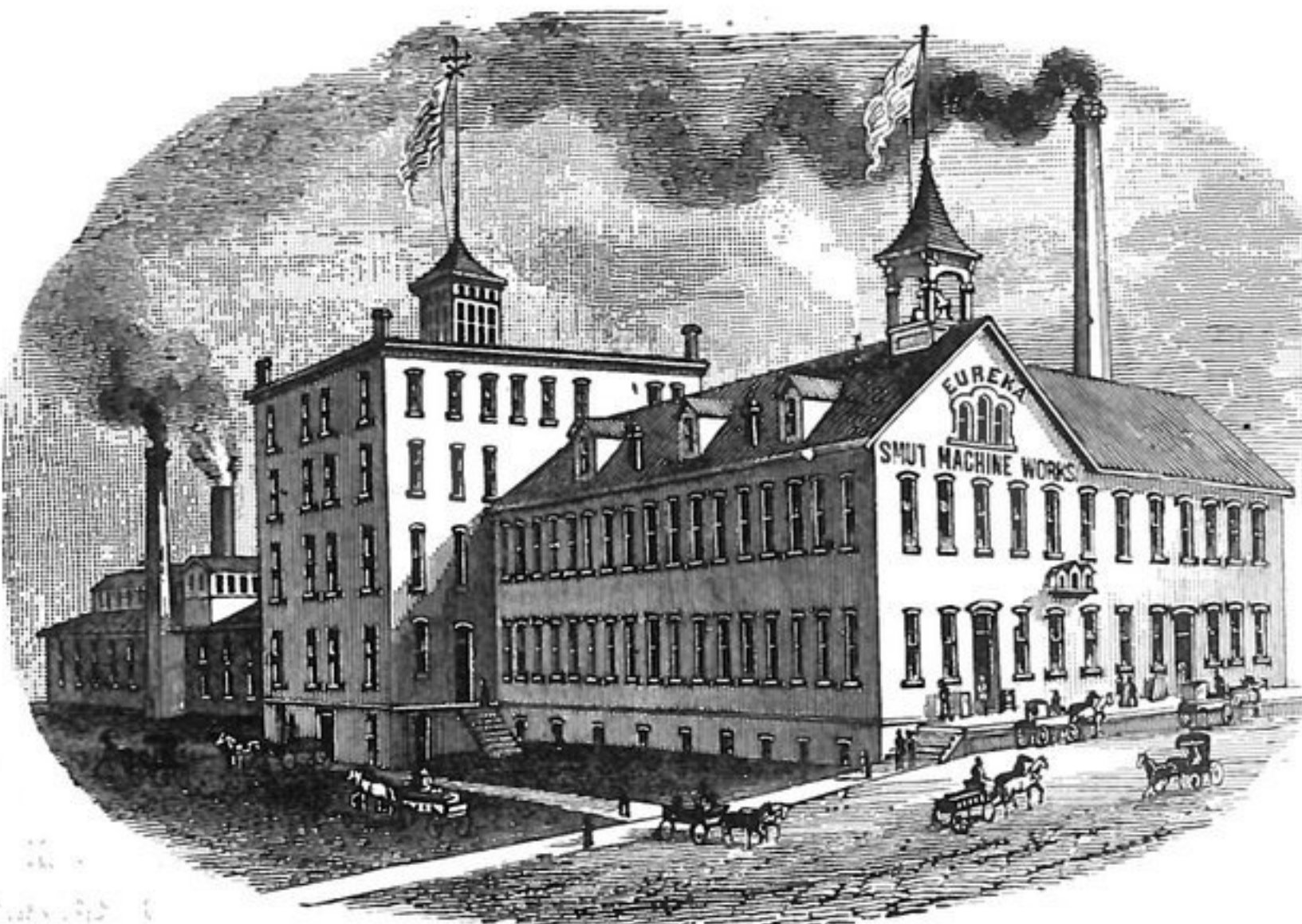
OUR LINE COMPRISES

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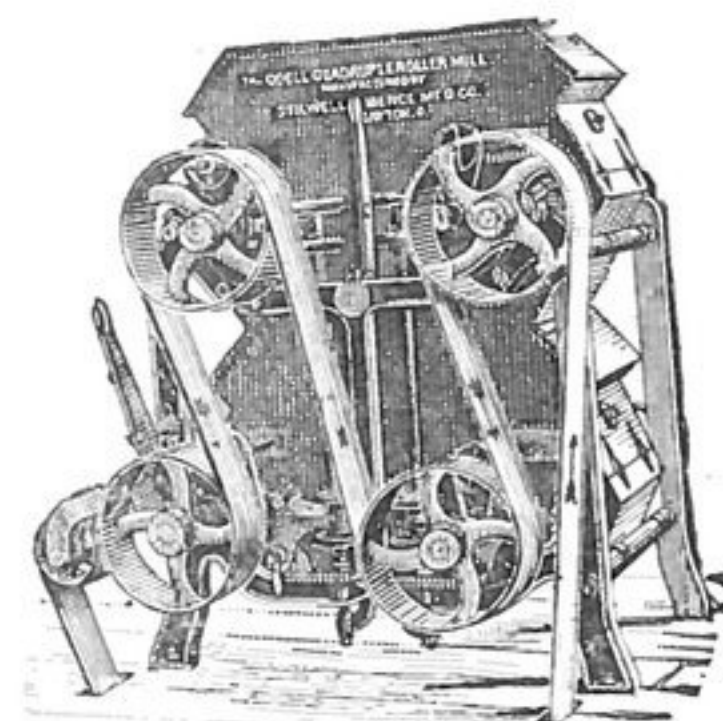
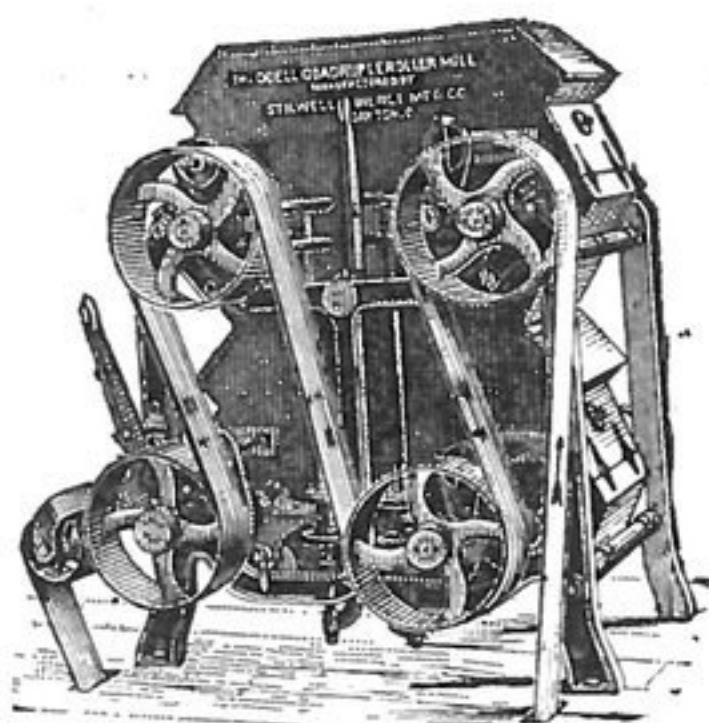
We handle this justly celebrated cloth in large quantities, and can fill all orders upon receipt. For such as may prefer a cheaper grade, we offer our

**ANCHOR BRAND BOLTING CLOTH.**

Guaranteeing it to be equal in every particular to any other cloth on the market, except the Dufour. We have handled it for years, have sold thousands of yards of it, and know it will fully sustain our representations.

Send For Samples of Cloth, Our Style of Making Up, and Prices.

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INTRINSIC MERIT,  
UNDOUBTED SUPERIORITY,  
RELIABILITY OF WORKMANSHIP,  
UNAPPROACHABLE QUALITY OF RESULTS,  
EASE IN ADJUSTMENT AND MANIPULATION.  
MIGHT READILY BE MADE UP WERE TIME AND  
SPACE AT OUR DISPOSAL TO ENUMERATE ALL  
THE FEATURES PECULIAR TO THE  
**ODELL ROLLER MILLS**

FEATURES WHICH HAVE GAINED FOR THEM A REPUTATION HIGH ABOVE COMPETING DEVICES OF A SIMILAR CHARACTER, AND WHICH HAVE LED TO THEIR ADOPTION IN HUNDREDS OF MILLS, AND MADE OF THEIR PURCHASERS WARM FRIENDS AND ADVOCATES. WE INVITE CORRESPONDENCE AND WILL CHEERFULLY REPLY TO ALL INQUIRIES.

**STILWELL & BIERCE MFG. CO., DAYTON, O.**

**LORD BALTIMORE HOMINY MILL.**

PATENTED SEPT. 28, 1880, AND JULY 26, 1881.

**The Best, Most Durable, and Most Economical Machine.**

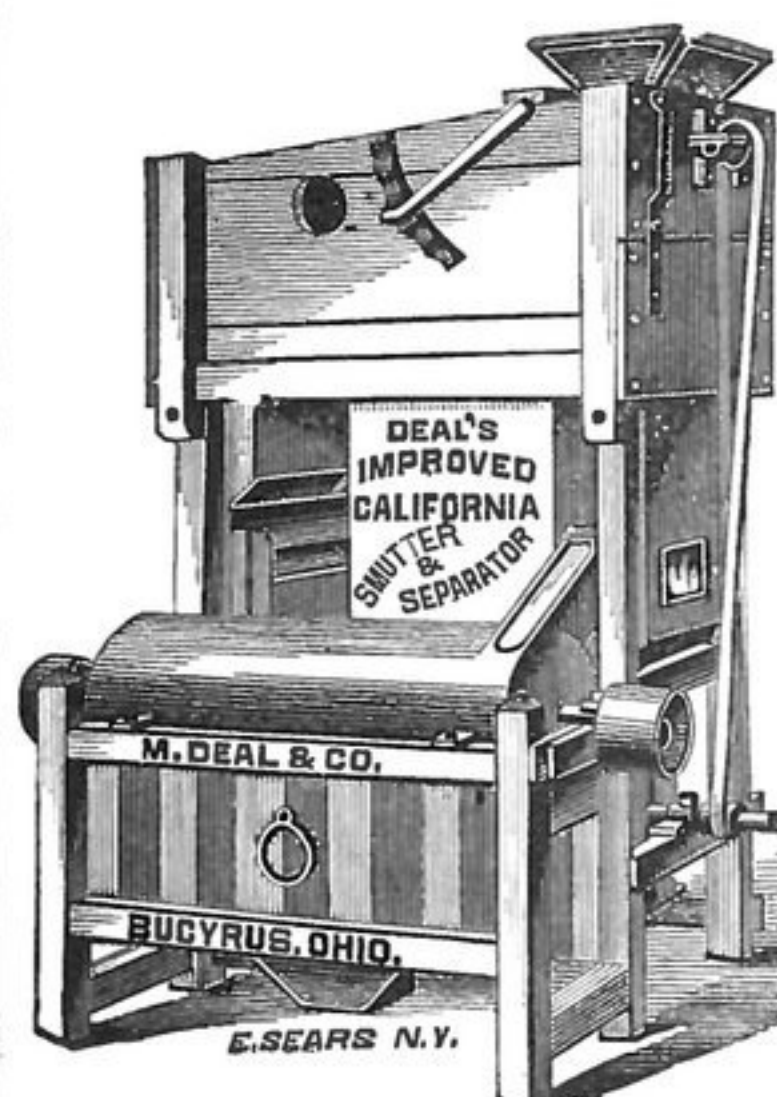
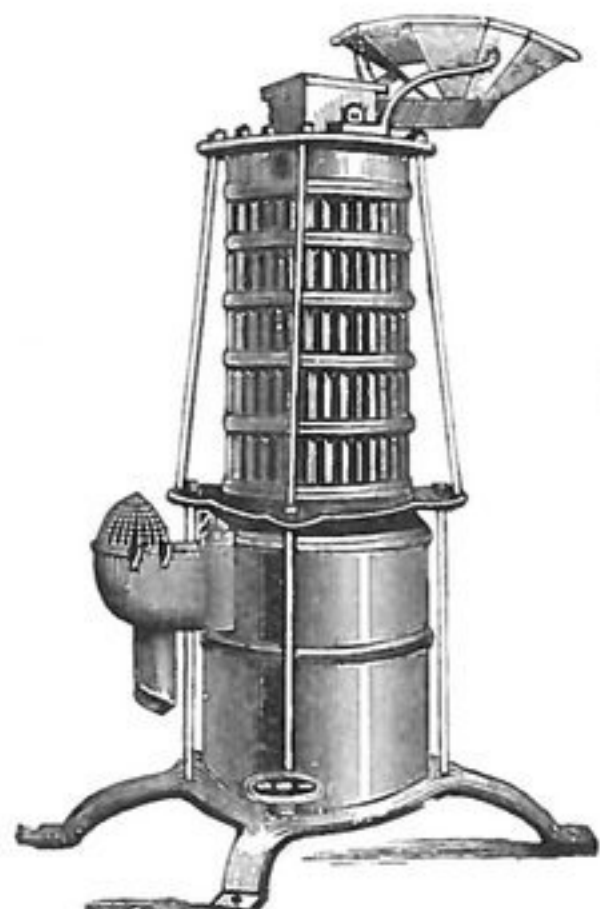
The Lord Baltimore Hominy Mill is no experiment, but is in constant use and giving unexampled results in several large mills. Its capacity is greater than that of any other hominy machine, being from three to five barrels of Hominy per hour, and in preparing the corn for Grits, Pearl Mill or Corn Flour, five to six barrels per hour. It is built of the best materials. The various cages are composed of an aggregation of staves, so that in case any of the staves are broken, they may be easily repaired with little trouble or cost.

For Prices, and further particulars, address  
**C. S. DAY, Patentee & Manufacturer, KENT ISLAND, MD.**

Please address all orders for Castings and Hullers to

**JAMES McMILLAN,****Nut Washer and Bolt Manufacturer and Machinist,**

151 NORTH STREET, BALTIMORE, MD.

**CALIFORNIA!**

DEAL'S CALIFORNIA MAGNETIC  
BRUSH SMUTTER  
AND  
SEPARATOR COMBINED

Warranted The Very Best In America.

The purchaser being the judge after 60 or 90 days' trial. We manufacture a complete line of Grain Cleaning Machinery, and guarantee every machine to give entire satisfaction or no pay. Send for circulars, it will pay you.

**M. DEAL & CO.,**  
Sole Owners and Manufacturers,  
BUCYRUS, OHIO U. S. A.



### ROLLER GRINDING-MILL.

Letters Patent No. 308,557, dated November 25, 1884, to William R. Fox, of Grand Rapids, Michigan. This invention relates to an improvement in roller grinding mills, the object being to provide improved means for checking the feed of the grain to the rollers and simultaneously moving the latter apart, and for bringing the rollers together without the necessity of readjustment of the parts, and at the same time start the feed of the grain to the rollers. A further object of the invention is to provide improved means for horizontally and vertically adjusting the rollers, and also to provide improved means for varying the tension of the driving-belt. In the drawings, Figure 1 is an end view of improved grinder, partly in vertical section and partly in elevation, the driving-pulleys and inner wheels being removed. Fig. 2 is a front view of a portion of machine, partly in section and partly in elevation. Fig. 3 is an end view. Fig. 4 is a plan view of a portion of the feed mechanism. Fig. 5 is a horizontal sectional view of improved feed-regulator, taken on line Z Z of Fig. 7. A A represent the supports or uprights of the frame, and B the upper cross-pieces thereof, on which frame is supported by means of brackets the mill-casing C, extending slightly above the frame, and having its sides converging toward the bottom. On the top of this casing is secured a feed-regulator constructed as follows: 1 represents the sides of the regulator, to which are secured the sides of the hoppers D, through the lower portion of each of which the grain is fed into a tray or spout, E. Each of these trays is supported by three or more rods, *a*, or their equivalents, situated as shown, the upper ends of two of which pass through the top of the hopper, the upper ends of said rods being provided with nuts or thumb-screws 2, adapted to bear on the upper face of the hopper, and by means of which the rear end of the tray may be vertically adjusted. The rod or wire *a*, supporting the front end of the tray E, is passed over a roller or pulley, 3, secured to a spindle, 4, mounted in frame-brackets secured to the inclined face of the regulator, the said rod or wire passing through the face and lug 5, and having the enlarged end, 6, provided with a screw-thread, 7. A nut, 8, fits on the enlarged end, 6, and against the lug 5, which nut, when turned, is adapted to raise or lower the front end of the tray. The lug 5 is also provided with a perforation, in which fits a pin, 9, against the lower end of which fits the shoulder 10 of the enlarged end of the said rod or wire *a*, and holds the front end of the tray in an elevated adjustment and checks the feed of the grain. Below the tray and to the side of the regulator are secured the inclines 11, upon which falls the grain from the tray, said inclines being situated one below the other and at angles with each other. Immediately below the said inclines are situated the rollers, between which the grain falls after leaving the lowest incline. In order to retain the rolls of each pair in the same horizontal plane, screws Z, are provided, adapted to be screwed through the top B of the frame, and having their upper ends bear on the under side of one end of the inner boxes, U, and by raising or lowering the screw thereby raise or lower the box, the screw, after being adjusted, being held in position by means of lock-nuts *m*. Each of the boxes U is provided with a lubricating-cup, *u*, adapted to receive oil or other lubricant and keep the bearings

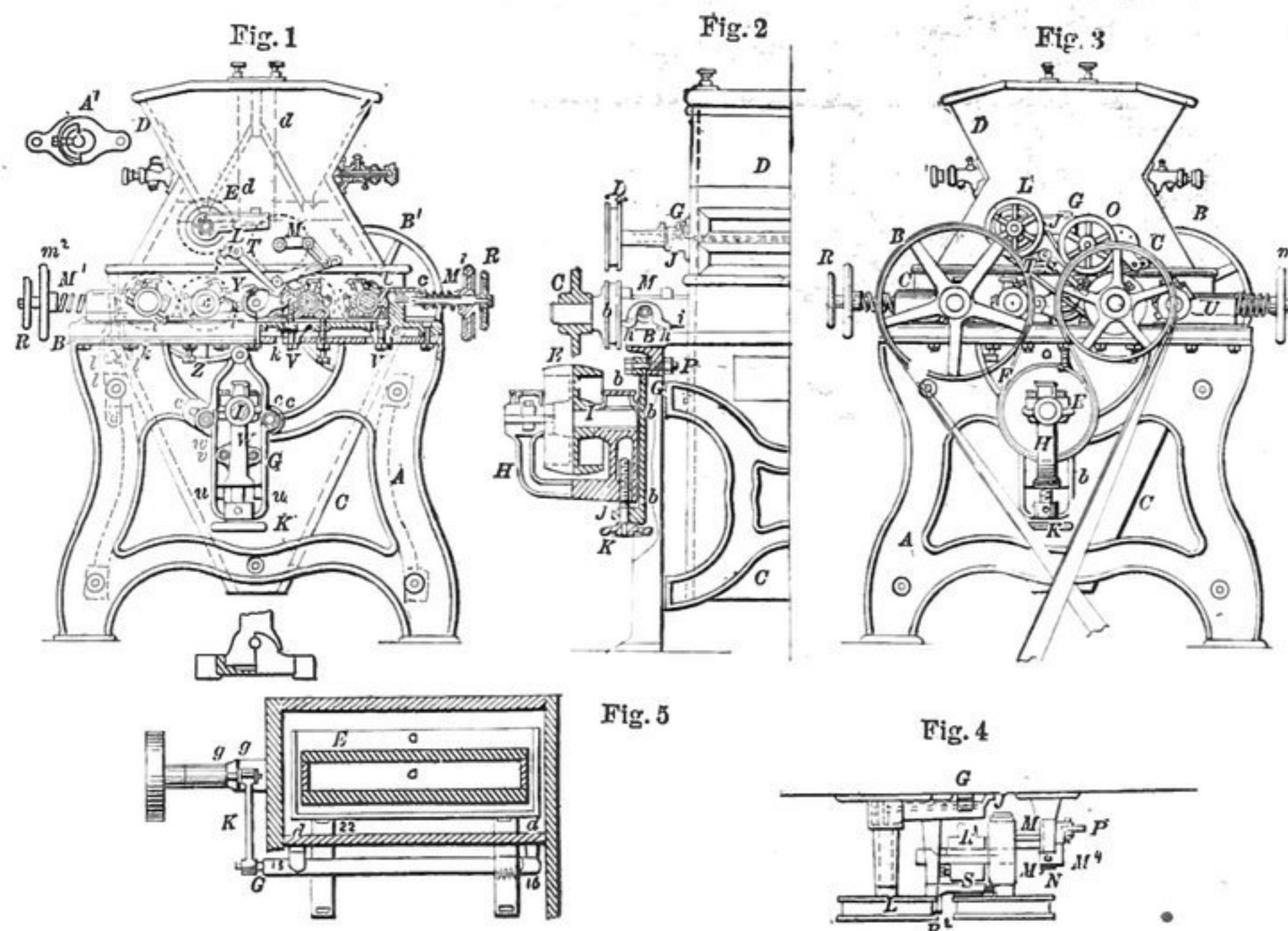
well oiled. To one of the shafts X of the inner rolls is secured a pulley, *b*<sup>2</sup>, around which passes a belt, D', which also passes around the pulley L and around the under side of the tension-pulley O. When motion is imparted to the rolls, the motion is imparted through the belt D' to the pulleys L and O and to the feed-regulator. When stopping a mill it is necessary not only to stop the feed, but to separate the rolls in such manner that they can be returned to their original position without the necessity of readjustment. This is accomplished by securing to the end of the shaft R the double eccentrics A', the outer ends of the arms of which are pivoted to the inner boxes, U. When the lever *b*<sup>2</sup> on the shaft R is operated in one direction the two inner rolls are drawn together and away from the outer rolls, the tension-pulley O raised as heretofore described from the belt D', and the

and thus cause a rubbing action upon the grain, thereby more effectually crushing the latter. This arrangement of the large and small belt-pulleys is an important feature in roller grinding-mills for the following reasons: When the two large pulleys are placed on one side of the machine and the two small pulleys on the opposite side, the belt that drives both of the small or fast pulleys has imposed thereon an undue amount of work, because the frictional contact of the rolls is sufficient to cause the rolls driven by the small pulleys to impart a greater speed to the other or slow rolls than will be imparted to them by their own driving-belt, and hence causes the large pulleys to be driven at a greater rate of speed than their driving-belt. This operation of the belts entails undue strain and work on the driving-belts and prevents the certain and fixed variable speed of the two rolls that is de-

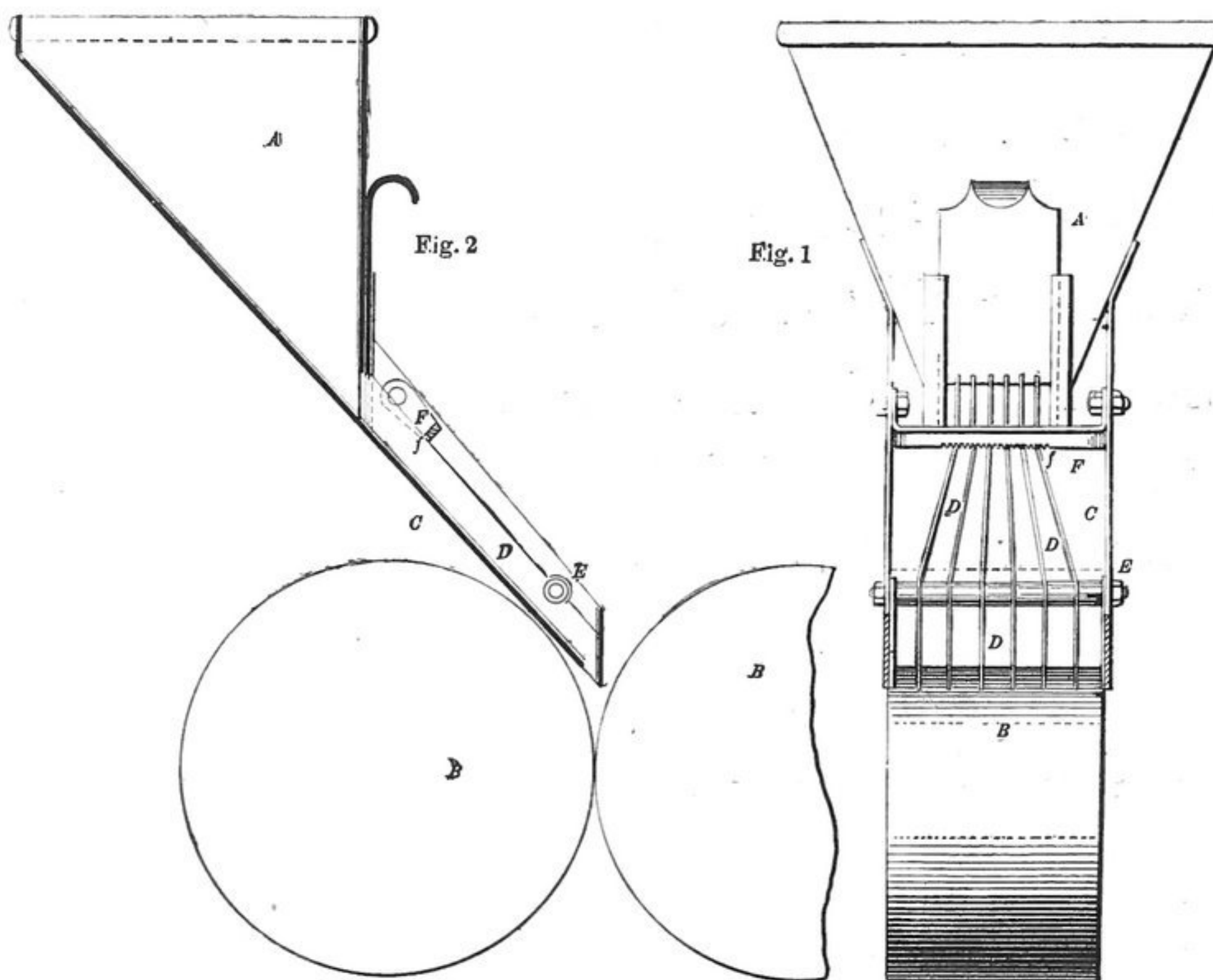
provided with grooves, in which are received the guideways *u*'. The yoke H' is held against displacement by the bolts *v*, passing through the yoke and elongated slots *w*, formed in the standard. The suspended standard is secured in any desired horizontal adjustment by means of the bolts *c*<sup>5</sup>, extending through the laterally-projecting lugs *c*<sup>6</sup> on the standard and through the elongated slots *c*<sup>7</sup> in the frame of the machine. By adjusting the bolt *p* in the nut *r* the upper end of the standard may be inclined outwardly, for the purpose of adjusting the tension-pulley at the proper inclination to cause the driving-belt to run true on the large and small driving-pulleys. (See Fig. 2.) In this yoke H' is journaled a horizontal shaft, I', to which is secured the band-wheel E'. The lower part of the standard is provided with a bearing, *x*, through which passes the screw J', adapted to be screwed into the lower end of the yoke H', and provided on its lower end with a hand-wheel, K'. By turning the hand-wheel K' the yoke H' and band-wheel E' journaled therein may be raised or lowered, and thereby regulate the tension of the belt F'. After the pulley has been properly adjusted the bolts *v* are tightened, and the yoke thereby held against displacement, the screw J' being prevented from turning by means of a set-screw, *y*, passing through the bearing *x* and impinging against an annular bearing on the screw-shaft. In grinding flour means must be provided for scraping the flour from the rolls, as otherwise the flour would adhere to the rolls and operate to force apart and seriously interfere with the operation of grinding. Hence, a scraper that is simple and effective in its operation is provided, the following being a description of its construction and arrangement relatively to the rolls: Each roll is provided with a scraper N', which consists of a strip of sheet metal extending throughout the length of the rolls. Each scraper N' is supported at its opposite ends in guideways N<sup>2</sup>, secured to the inner sides of the mill-casing. As the scrapers are located above the rolls, they will be fed downward on the rolls by gravity and remove any flour or substances adhering to the rolls. To impart proper weight and stiffness to the scraper, cast or wrought metal bars N<sup>3</sup> are secured thereto. If desired, the mill may be constructed so that the outer roll of one pair may be moved outwardly independent of the other set and the rolls separated. To accomplish this result there is provided at each end of the machine a lever, L<sup>3</sup>, having a downwardly-projecting arm, L<sup>2</sup>, pivoted at its lower end. Arm L<sup>2</sup> is provided with an opening, L<sup>3</sup>, in which is fitted a sliding box, L<sup>4</sup>, having an eccentric bearing, L<sup>5</sup>, mounted therein. A shaft, L<sup>6</sup>, mounted in the end frames of the mill, extends through the eccentric bearings. By rotating the shaft L<sup>6</sup>, the levers L<sup>3</sup>, which are connected in any suitable manner to the boxes of the outer rolls, may be moved laterally in either direction.

### ROLLER-MILL.

Letters Patent No. 308,568, dated Nov., 25, 1884, was issued to Thomas William Bassett Mumford and Robert Moodie, of Victoria Docks, county of Essex, England. This invention consists of an improved construction of feeding device for crushing machinery, in order to secure an equalized feed for various grades of material—such as grain, and other substances—from the feed-hopper to the grinding or crushing rollers; and the invention consists more particularly, of an inclined feeding-surface having adjustable strips or ribs radiating from a point behind the outlet from the hopper down toward the rollers, together with a retaining-bar to hold the ribs in the positions to which they have been adjusted. These adjustable strips or ribs diverge, so that the series at the discharge end next the rollers



PATENT NO. 308,557. ROLLER GRINDING MILL.



PATENT NO. 308,568. ROLLER MILL.

brake S applied to the pulley L simultaneously, thus completely and effectually stopping the feed of the grain to the mill. Again, by turning the lever in the opposite direction the feed is started and the inner rolls returned to their operating positions without readjustment of any of the parts, the lever being held in any desired adjustment by a sector-bar or other suitable means. To the outer end of one of the outer shafts X is secured a large band-wheel, B', and to the outer end of the inner shaft of the other pair of rolls is secured a smaller band-wheel, C', and this same arrangement of band-pulleys is duplicated on the opposite side of the machine. Below these pulleys or wheels is adjustably secured a tension-pulley, E', around which wheels or pulleys pass belts F', which latter also pass around pulleys driven by an engine or other power. By thus employing pulleys of different diameters the rolls will move at different rates of speed,

sirable in this type of grinding-mills. By the improved arrangement of pulleys each driving-belt engages one slow and one fast pulley, and hence an equal amount of work is imposed on each belt. The pulley E' is mounted in the following manner: G' represents depending standards located on opposite sides of the machine. Each standard is provided at its upper end with a sleeve-bearing, *b*<sup>4</sup>, loosely mounted on the bolt *p*, said sleeve-bearing being located between the nut *b*<sup>6</sup>, rigidly fastened to one end of the bolt, and the shoulder *b*<sup>6</sup> on the bolt, the latter being secured in place by the nut *r*. This construction and arrangement of parts will enable the lower end of the suspended standard to be moved to any desired horizontal adjustment. Each of the standards G' is recessed and provided with guideways *u*', formed integral with the standard. Within the recess is located the slide *b*<sup>7</sup> of the yoke H', said slide being

extends through a space equal to or about equal to the length of the rollers, so that the said ribs form separate channels extending throughout the length of the plate. The said ribs or strips are made of soft iron or steel, and are so connected with the plate or surface that they can be bent or turned to one side or the other, and held there by the retaining-bar, so as to give an equalized or regulated feed of the material to all parts of the peripheries of the rollers, and thus the wear of the rollers can be equalized and a much more perfect crushing effect of the rollers upon the material be obtained. An equalized feed will also be insured, notwithstanding considerable variation in the size of the pieces or particles of the substance under treatment, as the apertures at the outlet from the receptacle or hopper are made much deeper than usual, and are of a size to admit of the passage of the largest pieces or particles which are likely to present themselves, and which would with the ordinary arrangement cause an obstruction of the feed. The invention is applicable, generally, for feeding matters to the rollers by which they are to be crushed. Figure 1 represents in front elevation, and Fig. 2 in transverse section, an apparatus constructed according to the invention: A is the hopper from which the substance to be crushed is delivered, and B are the crushing-rollers. C is a plate extending from the outlet of the hopper to the rollers. The said outlet is of a width less than the length of the rollers. The strips D divide the plate C into a series of channels, which radiate or widen out as they approach the crushing-rollers. E E represent filling and distance pieces upon a bolt for securing the strips in position, and F is a bar which can be raised and lowered, and is provided with notches f, into one or other of which the strips can be placed to equalize the feed, as required.

#### RUSSIAN VS. AMERICAN WHEAT IN SWITZERLAND.

Referring to his dispatch of 23d of August last, concerning the danger of Russian wheat driving American wheat from the Swiss market, Consul-General Cramer, of Berne, now writes to the State Department, saying that the rich harvests of the present season in Russia, as well as the masses of wheat stored in various parts of the country, especially in Odessa, and the reduction of the through freight tariff, leave little doubt that Russian wheat will supersede American wheat in Switzerland and South Germany. We quote further:

"The Russian wheat dealers strain every nerve to supply the markets of central and southwestern Europe with this article. They are supported in their endeavor by the low cost of transportation, both by railway and sea and river steamers; in consequence of which Russian wheat is offered at a very low price. All these circumstances cause a constant increase in the export of wheat into Italy, South Germany and Switzerland, via Genoa, Marseilles, Antwerp and Rotterdam; so that this country is now almost entirely supplied with Russian wheat.

"The freight of wheat from Odessa to any one of those ports is from 25 to 40 cents per 100 kilograms, and from Antwerp up the Rhine to Mannheim 16 to 18 cents, while from Rotterdam it is as low as ten cents per 100 kilograms. Statistics show that the export of American wheat has decreased, while its production has been increased. There must, therefore, be a necessary fall in its price. What is to be done? In order to furnish an outlet for the surplusage, both its price and the cost of its transportation must be reduced.

"Let American wheat exporters send a competent person to Europe, whose duty it shall be to carefully study the wheat market of England, Germany, Switzerland, etc.,

as well as the question of transportation of wheat from the ports of Genoa, Havre, Marseilles, Antwerp and Rotterdam to the wheat centres of the interior, and form commercial connections with such centres by offering a good quality of wheat, or at least the same price as Russian wheat can be purchased for. American wheat can be cheaply transported from New York, Philadelphia and Baltimore to any of the above mentioned ports, either in freight steamers or in sailing vessels, or in both; and by judicious management it may regain the command of the markets of England, South Germany and Switzerland."

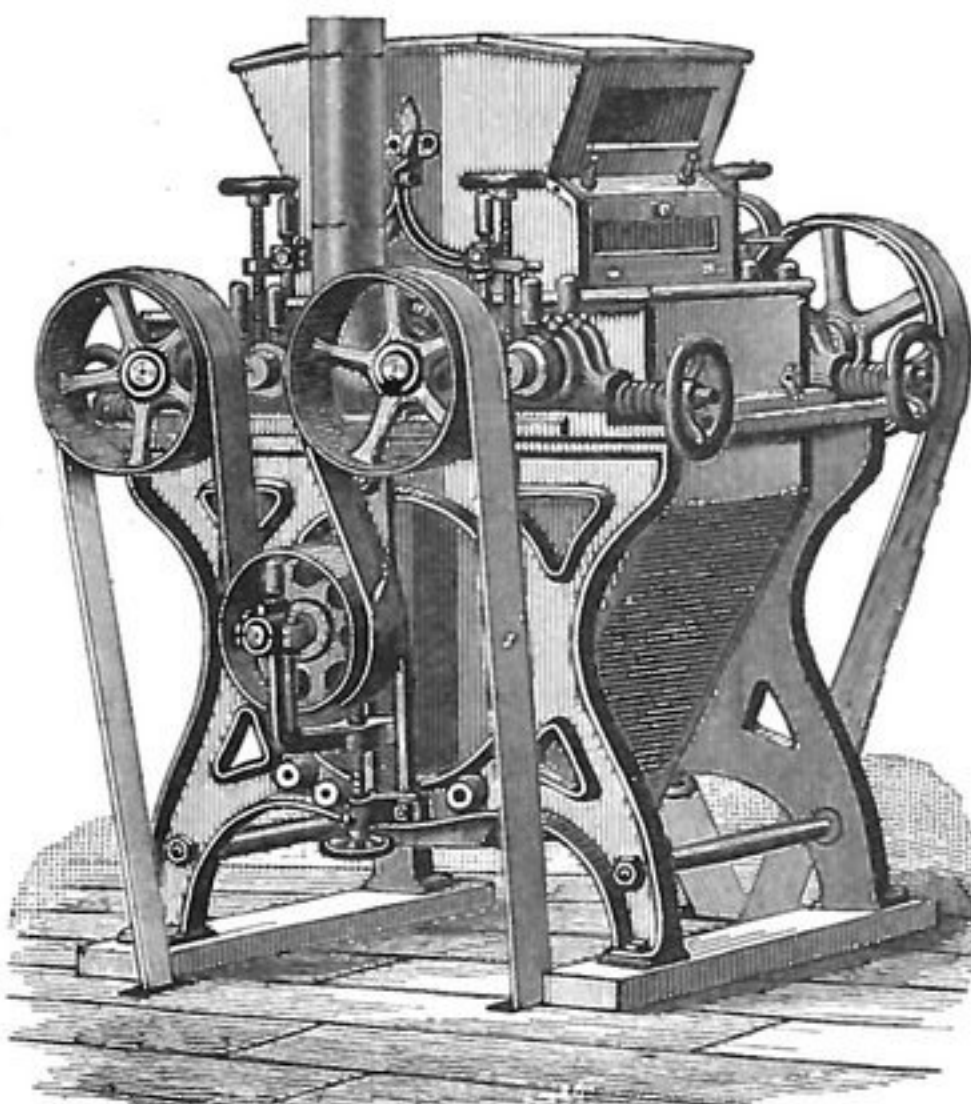
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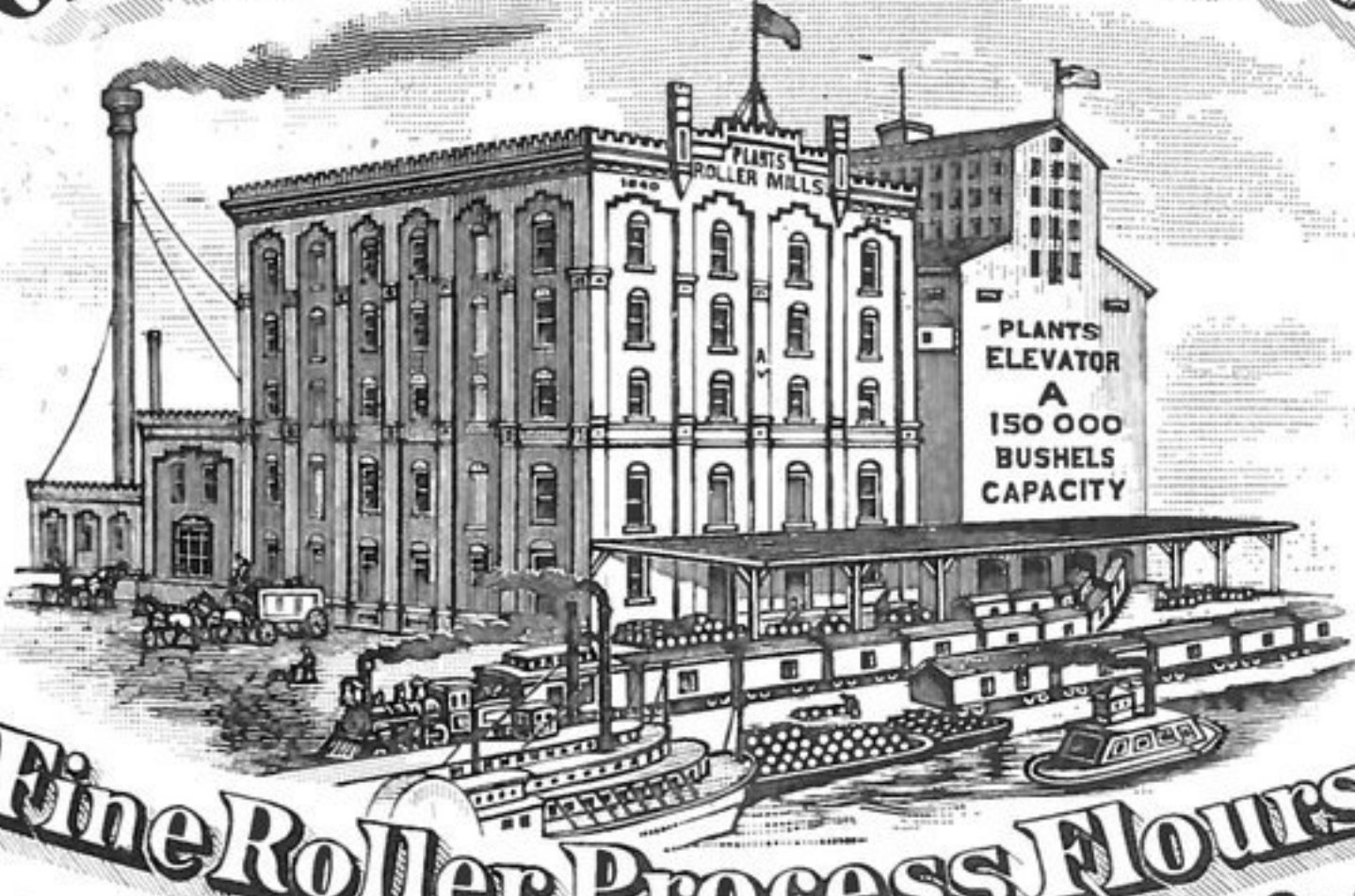
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St Louis Sept 17, 1884  
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Rolls in use in our Mills & from the  
amount & quality of work they are  
doing, we believe we are right in  
saying that they are superior to  
any other rolling machines of any  
kind or description whatever, when  
in mechanical construction,  
finish & character of material  
used in their manufacture  
they are unequalled by any  
Mill Machinery produced in  
this country.

Very truly yours,  
Geo. P. Plant.  
T.P.

## SCIENTIFIC AND MECHANICAL

### BOILER INCRUSTATIONS.

From *Die Muehle*.

II.

MANY favorable reports have been published about the use of zinc; so, for instance, Messrs. Bruckman & Son, in Heilbron, used a very hard water after placing about 54 pounds of zinc scraps into their boiler. The incrustation which had before the trial accumulated in the boiler from the use of this water, had to be removed by picking with a hammer, but after the use of the zinc a milk white, slimy lime deposit was formed in the boiler in large quantities, easy to be removed. The zinc scraps had not diminished in size after four weeks use, and only the smallest fragments looked corroded, from which it would appear that ordinary zinc scraps would last from six to eight weeks. These gentlemen estimated one kilogramme of zinc scraps per month for every horse power generated in their boiler. Of course such a proportion is only relative, and will depend upon the quality of the water. The Central car shops of the Main-Neckar Railroad have also obtained good results from the use of zinc, and their experience is given in the following resume: The action of the zinc to prevent scales in so evident, that it can be accepted as a demonstrated fact. The zinc is best put into the lower portion of the boiler, but so that it cannot be covered by the sediment. It is advantageous to subject the boiler to a thorough cleaning every three or four months when in constant use. The estimated quantity of the zinc necessary is 0.24 kilo. per square meter of heating surface; it does not make any difference whether all the zinc is placed into the boiler at once or gradually in smaller quantities.

The efficiency of zinc to prevent scales is undeniable, although many others have tried it and found it useless. These gentlemen have forgotten the proverb that one remedy does not cure everybody. A thorough knowledge of the composition of the feed water is of the greatest importance to every steam user, and with the great variety of water used, it seems impossible that we can ever discover a universal remedy to prevent boiler scales. Each variety of water needs a different treatment. The substances which act chemically for this purpose are many-fold. While in times gone by the place for the purification of the water was the boiler itself, a better understanding of the principles of engineering purifies the water before admitting it into the boiler, so that it is impossible to form either scales or modified scales.

The best results with this improved manner of preventing scales are obtained by the methods of de Haen and Von Bohlrig. De Haen uses chlorbaryum and caustic potash. A thin solution of chlorbaryum and a saturated solution of lime water are run simultaneously into the heated feed-water, which is led through a continuous series of reservoirs to allow a thorough deposition of the sediment. The expenses are small. The boilers remain clean even if the waters are muddy. The mud deposited is formed of carbonate of lime and sulphate of barytes, and never bakes into hard scales.

Von Bohlrigs magnesium preparation has found many advocates for its use. The fluid, after adding the magnesium preparations, is stirred for about 10 minutes; then a current of hot carbonic acid is blown through it until the water boils. The resulting oxide of magnesium abstracts the carbonic acid from the lime salts contained in the water and forms with the carbonate of lime, sulphate of magnesia and carbonate of lime. There are many attestations to the

efficiency of Bohlrig's method, likewise records of its failure. The reasons for the latter may be due to the difference in the water used on one hand and the careless manipulation of the method on the other hand.

\* \* In the recent boiler tests at the Electrical Exhibit at Philadelphia, a simple and effective form of draught gauge was used, which was designed for the purpose by Prof. J. Burkitt Webb, of Cornell University, Ithaca, N. Y. With this gauge any ordinary scales can be used, which will weigh to ounces or fraction thereof. A board about a foot square rests flat on the scales and in its upper side there is an annular groove filled with mercury, so that when the scales are balanced, the weight of the board and mercury is shown. Into the mercury dips the edge of an inverted cover, or lid, from which a pipe runs into the flue or stack, so that there will be the same pressure in the same space beneath the cover, as there is in the flue, while over all the rest of the board the pressure will be that of the atmosphere. If now the pressure in the flue is slightly above or below that of the atmosphere, the board will be pushed down or drawn by a force equal to the area beneath the cover multiplied by the difference of pressure, and this force can be weighed upon the scales. We learn that a detailed description with cut and an example worked out will be the subject of a paper at the spring meeting of the American Society of Mechanical Engineers.

\* \* Every few week we find in some trade paper with aristocratic sympathies a chapter of lamentations on the decline of the apprentice system, says the American Machinist. There never was an apprentice system in America of the character known to the old guilds, where the trade masters in Europe imitated the feudal military practices by grasping their subordinates with an iron hand; but there has been no difficulty in training youths to do work of skill, which is really the end wanted. With all its looseness of organization and habits of personal freedom, the practice of the American shop turns out excellent workmen, whose production compare favorably with the best work of any nation. In the mechanical trades particularly there are very good opportunities for youths desiring to learn a trade and to learn it thoroughly, although in some branches the practice of sub-dividing labor has tended to confine men to single operations. That there is no lack of skill is apparent to any one who has the means of seeing the excellent output of our workshops. So long as the high standard of skill is maintained, it matters little in what way it is attained.

\* \* This Government has received official notice that the revised international regulations for preventing collisions at sea have been adopted by all the leading maritime powers except the United States, and came into force on the 1st of September last. For the due protection of our shipping interests, the President thinks the provisions of our statutes should at once be brought into conformity with these regulations.

\* \* The price of natural gas for family use in Pittsburgh has been reduced to 15 cents per 1,000 feet, and to the mills and factories, where a large amount is required, the price is half this sum. It is cheaper than coal, and when the arrangements now in progress for an ample supply are perfected, it will supersede the use of coal in that city and neighboring towns.

\* \* The action of the American Society of Mechanical Engineers in calling for reform in the Patent Office, appears already

to be bearing fruit, for the newspapers all over the country are calling upon Congress to have help enough in the Patent Office to transact business promptly.

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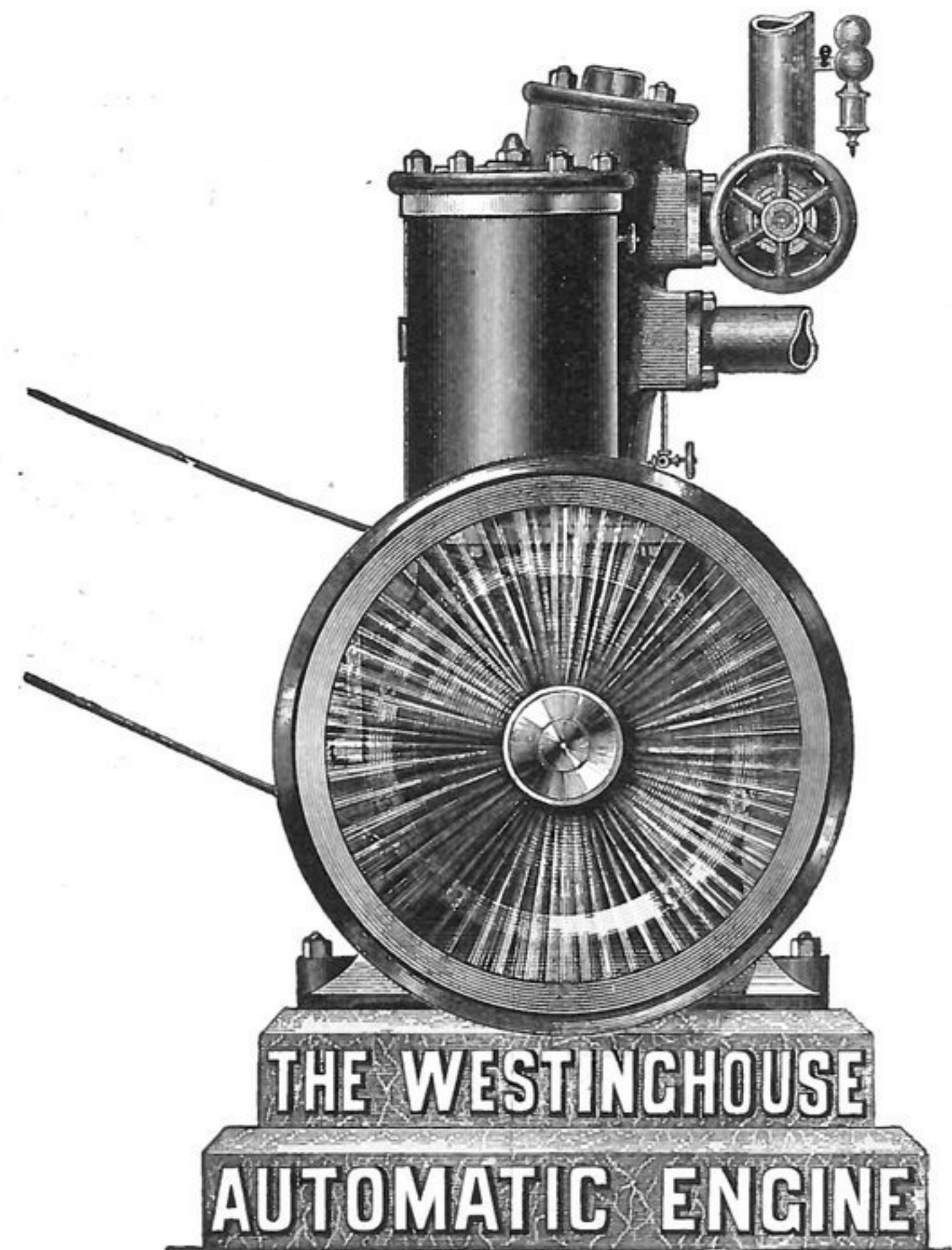
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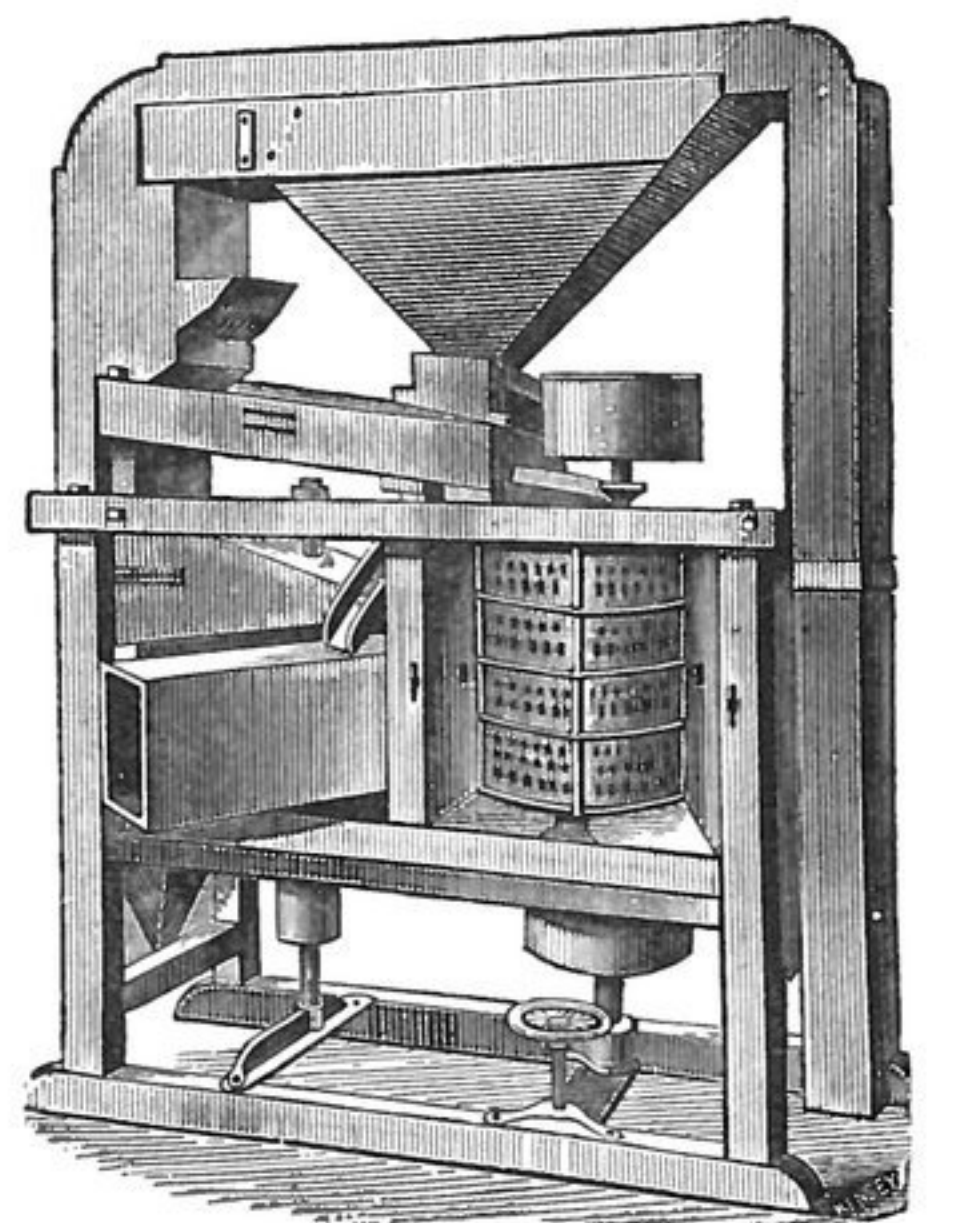
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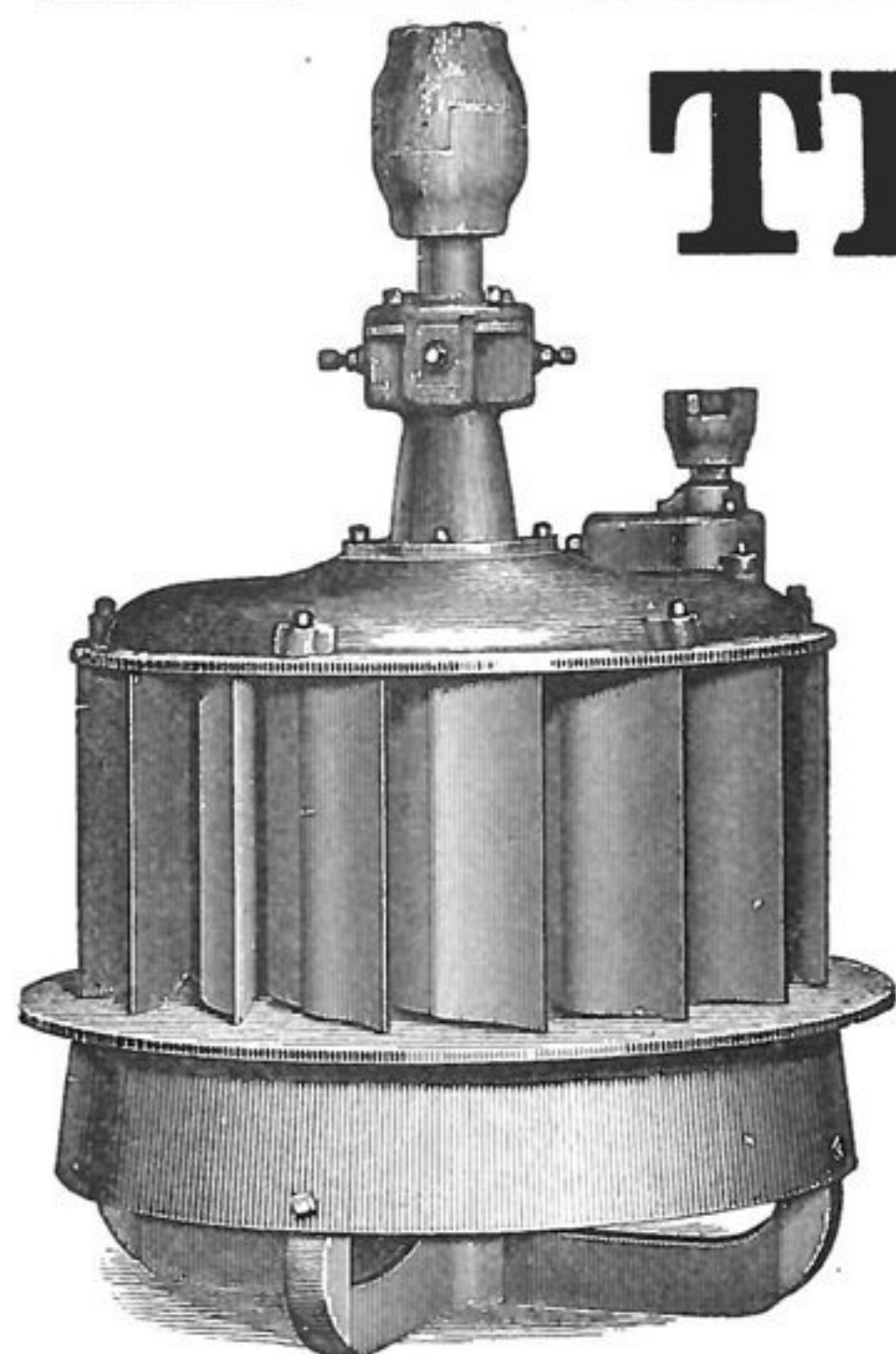
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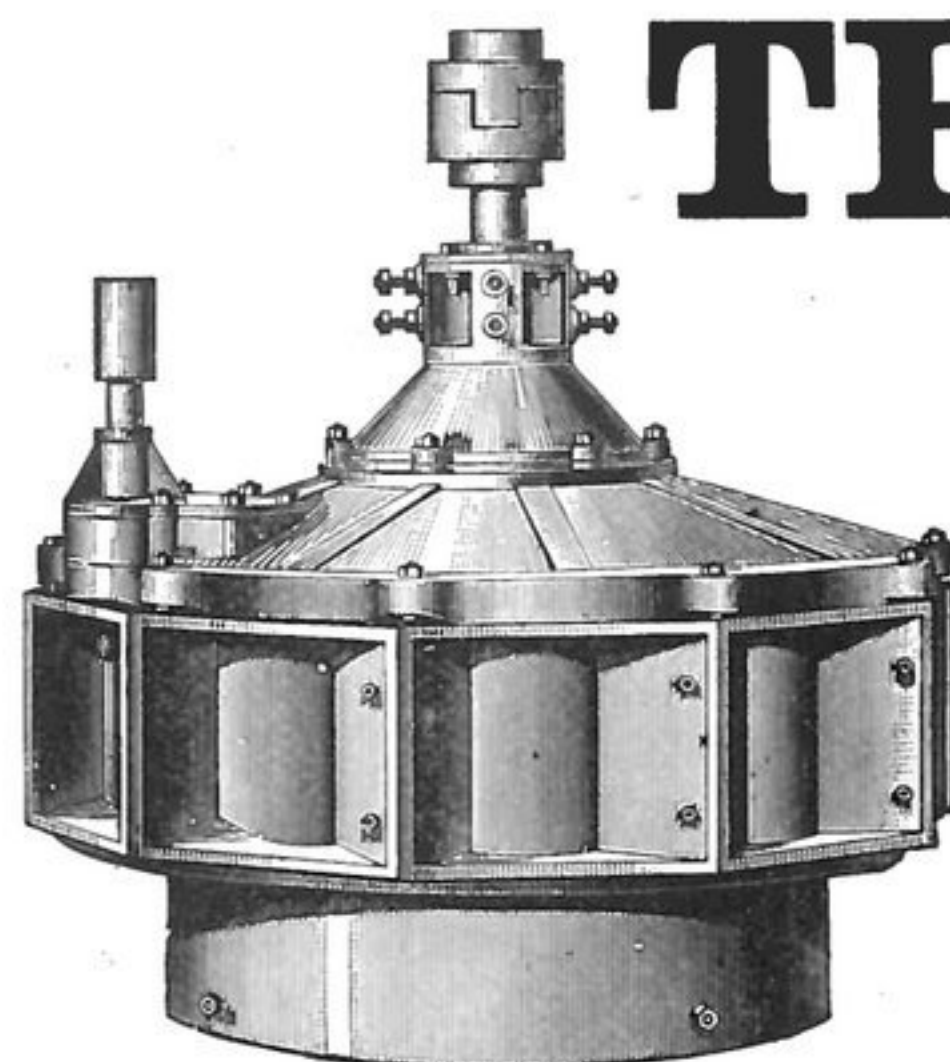
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From the Records of Actual Tests at the Holyoke, Mass., Testing Flume:

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24 Inch Wheel.....	.8206	.7910	.7700	.7003
24 Inch Wheel.....	.8078	.7578	.7275	.6796
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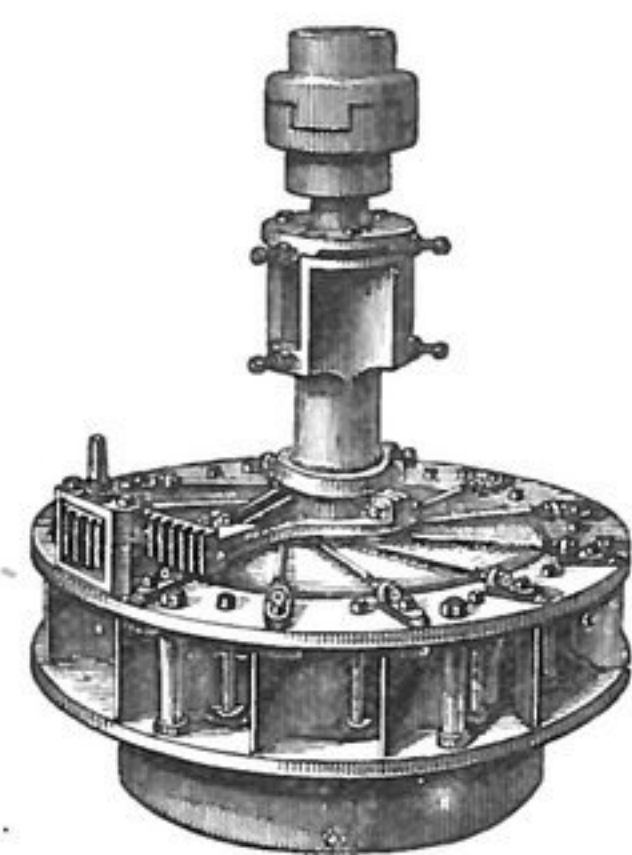
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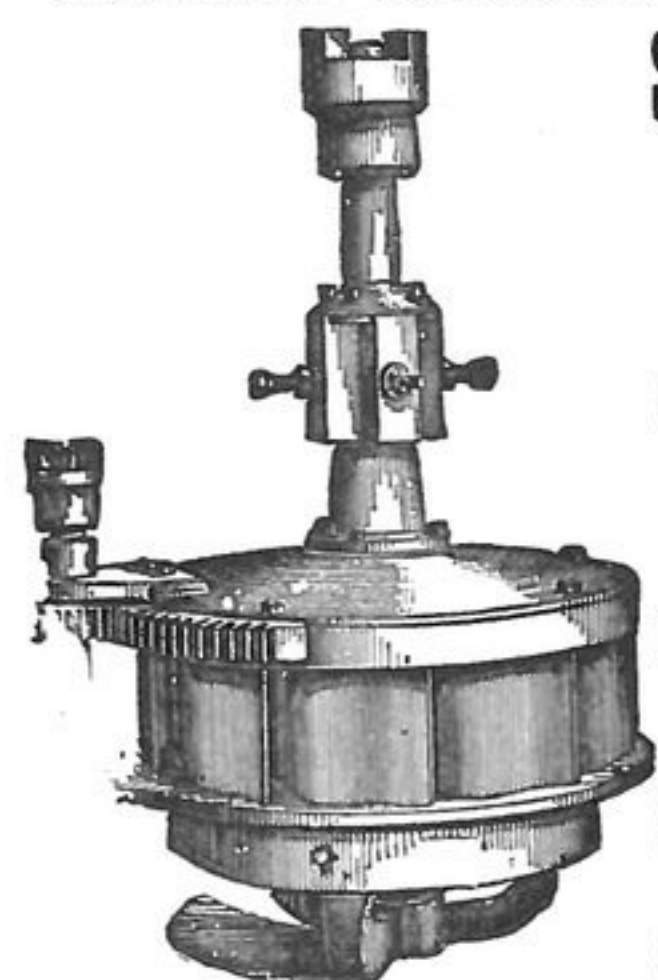


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IS THE  
Best constructed and finished,  
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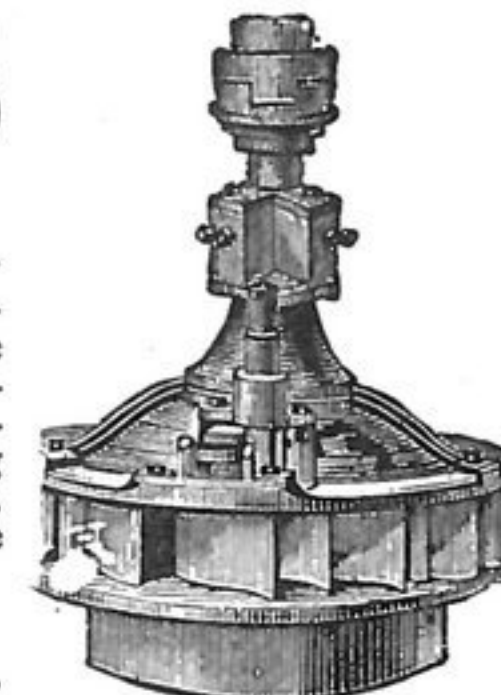
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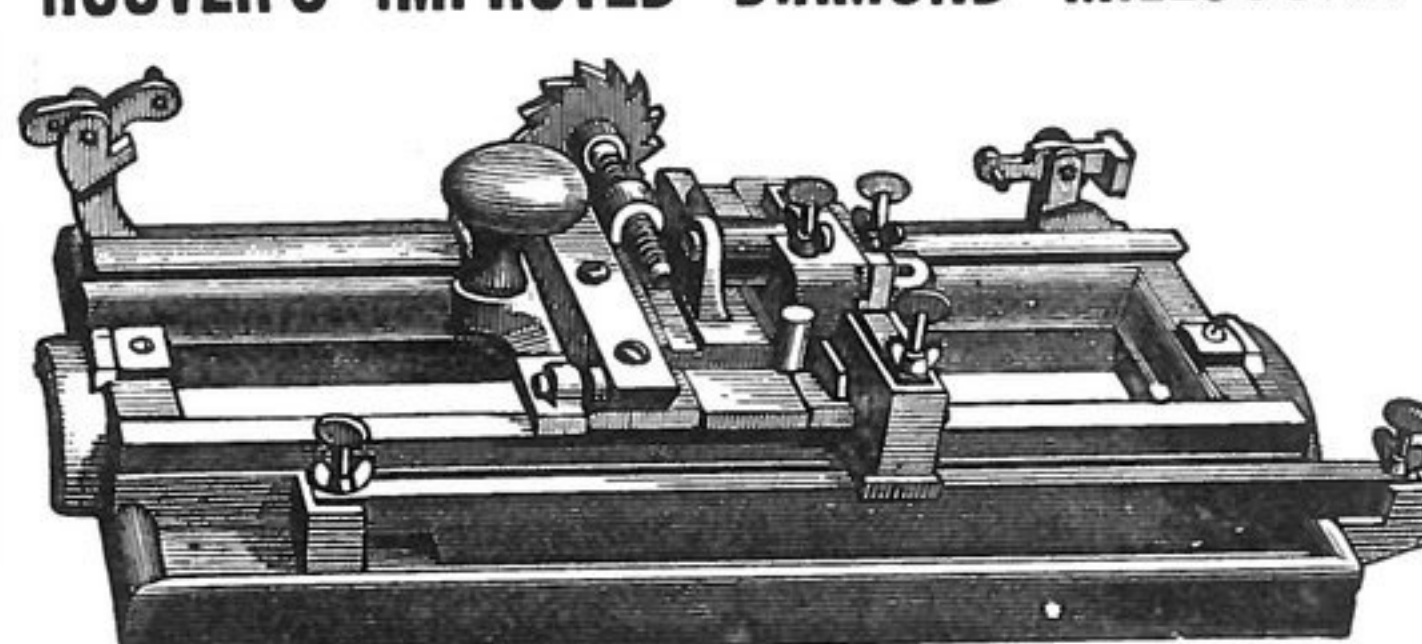
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Will do as good work, and is more easily adjusted than any other machine. Sent on 30 days' trial. Address for circulars, containing full information.

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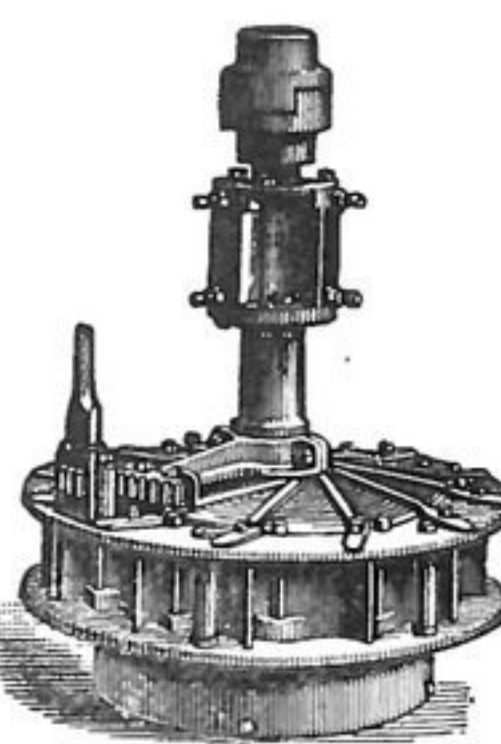
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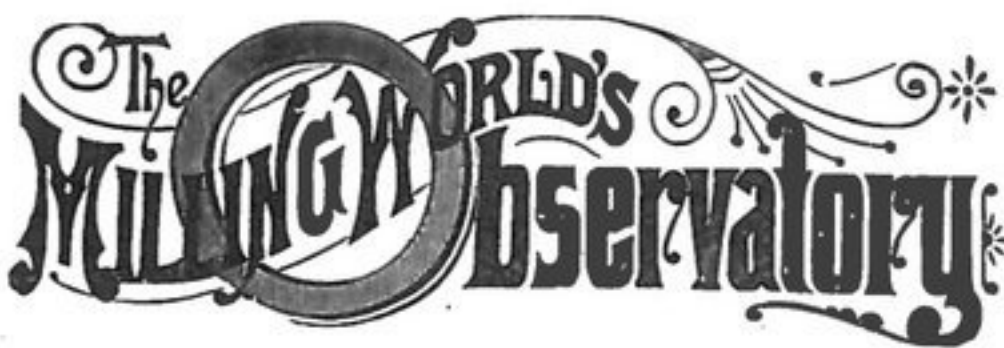
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Special Attention given to Heavy Gearing. Shipping Facilities the Best in All Directions.

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## OUR MINNEAPOLIS LETTER.

[From our own correspondent.]

ICE—BOTHERED MILLS OUT OF TROUBLE AGAIN  
—A SCHEME FOR SPECULATIVE TRADING—  
FLOUR INSPECTOR GETS A SALARY NOW  
AND IS HAPPY—THE MILLERS' MON-  
UMENT—GOSSIP AND NOTES.

The mills of Minneapolis had a most serious time a week ago with anchor ice and low water, but this week are running smoothly again. The trouble last week was occasioned by the ice gorging on rapids up the river and shutting off the water. Early in the week very few of the mills could run at a satisfactory gait, while a number could not do anything. In consequence, the output was reduced to the lowest point this fall, amounting to only about 15,500 bbls. per day. As the week drew to a close, the unusual warm weather which has prevailed for some time, was not without an effect, and by Saturday the mills had ample water and took a new lease of life. Since then they have been crowded to their utmost, and have probably made not far from 24,000 bbls. daily.

During the time that the mills were having trouble, the flour market seemed to tone up and, although no better prices are being obtained for flour, our millers show a greater desire to run their mills and increase their output. Though the domestic demand for flour is less active, foreign orders are more plentiful at old quotations, and the market is considered firmer. Millers are confident that values have finally touched bottom and are more wary about selling ahead, believing that the next move of the market will be in the nature of an advance.

The local wheat market has been irregularly lower the past week and closed somewhat firmer at 70 $\frac{1}{4}$ c. for No. 1 hard, 65 $\frac{1}{2}$ c. for No. 2 hard, and 60c. for No. 1. Wheat receipts are fair, but in the absence of heavy operations by the mills, the accumulations have been quite large. The shipments out of the city last week were probably the largest on record, amounting to not far from 300,000 bus. The amount of wheat in public elevators at three points are as follows:

	Bus.
Minneapolis.....	3,300,000
Duluth.....	2,450,000
St. Paul.....	1,150,000
Total bus.....	6,900,000

Besides this there are said to be about 300,000 bushels in the elevator at Stillwater.

The appended table shows the receipts and shipments of Minneapolis for two weeks:

FLOUR.			
	Receipts.	Shipments.	
	bbls.	bbls.	
Week ending—			
Nov. 25.....	1,215	114,875	
Nov. 2.....	1,350	112,770	
Total.....	2,565	227,645	

WHEAT.			
	Receipts.	Shipments.	
	bus.	bus.	
Week ending—			
Nov. 15.....	835,880	34,390	
Dec. 2.....	797,000	281,000	
Total.....	1,632,880	315,390	

Active members of the Minneapolis Chamber of Commerce have had under consideration for some time, a scheme to stimulate speculative trading, and their efforts have finally borne fruit. An agreement to settle all future deals by payment of difference in cash, instead of delivering actual property, has been signed by nearly every firm doing business on 'Change and it was posted on Thursday. This agreement, of course, does not debar a dealer from delivering the stuff if he chooses, but will prove a great stimulus to trading in futures. At a meeting of members held Tuesday night, a committee consisting of C. M. Harrington, F. A. Bishop and George W. Thomas, were appointed to provide rules governing business on the call, and a report will be made in a few days. A number of capitalists who are not now active members of the Chamber, have signified their desire to engage in buying and selling wheat on 'Change, but the regulations governing the business of futures has not been such as they desired. With proper encouragement this market will soon become one of the most important speculative markets in the country.

The Chamber has received a letter from General Manager Manville, of the Manitoba road, stating that the company was unable to comply with the request of the Chamber in the matter of alleged discrimination in sending wheat to the mills.

The matter was referred back to the committee appointed to investigate the matter.

Memberships to the Chamber show a steady appreciation in value, and are now worth about \$300. Three memberships of parties who had failed to pay the last assessment were sold at auction on Wednesday, and two of them brought \$300 and the other \$295. It is predicted that they will sell for much more by spring.

The office of flour inspector has been recently established by the Chamber of Commerce, and G. F. Helliwell, formerly of Milwaukee, Wis., has been appointed to fill it. Mr. Helliwell commenced inspecting last July, and, though the revenue of the office has steadily increased, it was not enough to compensate him for his time. The supervisors of flour inspectors recently held a meeting and decided the office to be a necessity and guaranteed Mr. Helliwell an income of at least \$60 per month. The charges for inspection are two cents per barrel, which is equally shared by buyer and seller.

The Minneapolis Head Millers Association held its monthly meeting on Tuesday evening last, with a fair attendance. The greater portion of the session was consumed by discussion relative to the selection of plans and the granite for a monument. At a previous meeting, at which C. A. Pillsbury, C. J. Martin and W. H. Hinkle, mill owners on the monument committee, were present, the opinion prevailed that Westerly granite would be the best, provided it did not come much higher than the other granites. At the last meeting it was stated that granite would cost about \$1,500 more, or \$5,000 from plans favored. The head millers have \$3,500 on hand and guaranteed, but it is very doubtful that they could raised \$1,500 more, and they don't seem to care to try, believing \$3,500 or thereabouts, enough to devote in this manner. A representative of the Hallowall granite, on invitation, addressed the meeting and seemed to make a favorable impression. Two new sets of plans were submitted, but no selection was made, nor will one probably be for a month or six weeks yet, as it is designed to first consult C. A. Pillsbury, who is in the east at present. There is desire, however, on the part of the head millers, to make a selection as expeditiously as possible, that work may be commenced on the monument at an early date, as the greater part of a year must be consumed before it can be completed and got in readiness for erection.

Our larger mills make a considerable saving, not only in money, but often in valuable time as well, by having facilities for doing their own repairing. This they are finding out and are more and more taking advantage of it. An instance recently occurred at the Washburn mills that furnishes a good illustration of what we mean. One of the large core-gears of the A. mill had worn out and needed to be retoothing. It was wanted back as soon as possible, and the job had to be rushed. The work had to be done by hand, and all the men that could be employed to advantage were set at it. In just seventeen hours from the time that the job was commenced the gear was filled and ready for use. On a previous occasion a similar gear had to be re-cogged, and it was sent to one of our largest mill furnishing establishments which has special machinery for that class of work. Here it took about a day longer to do the job, and when the bill for the work came in it was for \$500, which was paid. In the case where the work was done by the millwrights of the mill, the total expense did not exceed \$125, and the men employed were well paid, too.

The National Mill, the little steam mill on Second street which has passed through the vicissitudes of so many changes, has gone into new hands. It has now been turned over to a miller named W. Clark and two other parties, one being an Illinois man, and will very soon be started up on merchant work and feed. The last time that its operation was attempted was by Gunn, Scott & Co., about sixteen months ago. This firm overhauled it and put in Jonathan Mills machines and Allis rolls, but about the time they got ready to run it Mr. Gunn's company failed and the mill was thrown into the hands of the Citizens Bank, in the possession of which it has since remained, being idle all the time. The greatest drawback about it is that it has steam for motive power. We very much doubt that the present parties will be any more successful with it than their predecessors. It has a capacity of about 150 bbls.

Judge Cameron, of the La Crosse, Wis., probate court, has announced that early next week he will deliver an opinion upon the bequest for public purposes in the will of the late C. C. Washburn, especially upon the question as to when they shall become available. As the estate is steadily accumulating, it is believed that it is the purpose of the court and executors to set apart the sum bequeathed for a hospital at Minneapolis and library at La Crosse at an early day.

A corps of millwrights, in charge of J. W. Loomis, is kept steadily employed on the new part of the Minneapolis mill and has it well along in

construction. The mill building was originally built with room left for a third more machinery and this is now being put in, though the operation of the mill proper is not interfered with. The new machinery includes eight double sets of Stevens rolls, five centrifugal reels—two being the Smith, and two the Willford & Northway—six Smith purifiers and twelve Prinz dust collectors, the latter being attached to the rolls, purifiers, and cleaning machinery.

The matter of the head millers getting up an excursion to the New Orleans was brought up and a committee consisting of Messrs. Helfrich and Scott was appointed to learn the number of members desiring to attend and to determine the cost of transportation. The scheme as to charter a Pullman car and keep it throughout the trip to lodge in. It is expected that the party will be limited to twenty-five or thirty male persons, and if there are not enough members of the Association desiring to go to make up that number, some machinery men will probably be extended an invitation.

The latest enterprise that C. A. Pillsbury & Co. have thought of embarking in is the erection of a million and a half bushel elevator. The city and firm both need it, and there seems to be the best of reasons for believing that it will be built at the earliest practicable date. A site is said to have been already selected at the junction of the Milwaukee & St. Paul and Manitoba roads on the east side.

The 500 bbl. addition which Chas. Espenschied proposes to make to his mill at Hasting has not yet been commenced, but will probably be quite soon. Mr. Espenschied already has a mill with which he is now turning out from 550 to 600 bbls. of flour daily, and with the addition he will have over a thousand barrel mill. He has just completed a new elevator of 100,000 bushels capacity.

Robert W. Dunham, son of the editor of the *London Miller*, has returned home after being a very brief time in the Washburn A. His return is attributed to ill health, though it seemed to us more of a case of dislike for work.

Fred Russell, who worked for his father in the Model before that mill was burned, has purchased an interest in Rootes and Abert's mill near Elk River, Minn. Mr. Rootes was formerly Mr. Russell's partner in the Model.

Chas. Dawson, David Splanue, and H. Haskell are three millers that recently went to Salem, Oregon, to take positions under J. C. Menor, formerly of this city.

Messrs. Leas & Barnard, of the Barnard & Leas Mfg. Co., go to Europe this month, to be absent two months.

Hon. W. D. Washburn has taken his seat in Congress for the last time, his term expiring this year.

The St. Anthony has been shut down to be repaired and receive machinery for a seventh break.

The two Townshend mills at Stillwater, are turning out 650 to 700 barrels of flour daily.

The Association ordered 250 copies of the holiday number of the *North Western Miller*.

C. A. Pillsbury is now east, and will not return for three or four weeks.

Minneapolis, Dec. 5. CALEB.

## Notes from the Mills.

Chester & Co. have placed electric lights in their roller flour mill at Lockport, N. Y.

Floods in various parts of Spain have done serious damage to the crops, as well as to private property.

The Case Mfg. Co., Columbus, O., have an order from M. Lynn, Belden, Ind., for breaks, rolls, scalpers, etc.

The firm of Sackett, Ransom & Co., of Watkins, N. Y., has been dissolved, Mr. Allen B. Sackett succeeding thereto.

The Case Mfg. Co., Columbus, O., have an order from Schwenke & Ernde, Sugar Grove, O., for one No. 1 single purifier.

W. H. Burgess, Clarksville, Tenn., is putting in four additional pairs of rolls from the Case Mfg. Co., Columbus, O.

Wm. M. Brownless & Son, Pierre, Dakota, are putting a 35 H. P. Westinghouse automatic engine into their new flour mill.

We import every year five million bushels of barley, twenty million dollars worth of flax and ninety million dollars worth of sugar.

Myers & Matzer, Spencer, O., have placed an order with the Case Mfg. Co., Columbus, O., for four pairs of rolls with automatic feed.

The Case Mfg. Co., Columbus, O., have an additional order from R. Tuttle & Co., Columbia City, Ind., for one No. 1 double purifier.

At Bartlett, Ill., Dec. 4, fire destroyed a grist mill belonging to Carr & Lobdell. Loss, \$5,000; no insurance. The fire is supposed to have been started by tramps.

An order for one pair of rolls with automatic feed, for the flour mill at Mount Sterling, Ky., has been received by the Case Mfg. Co., Columbus, Ohio. The order came through the Richmond City Mill Works, Richmond, Ind.

Richter & Co., Williamston, W. Va., are putting in an additional pair of rolls, with automatic feed, from the Case Mfg. Co., Columbus, O.

At Sycamore, Ill., Dec. 6, the Ellwood elevator and its contents, a part of the Northwestern Stock Yards, and other property were destroyed by fire. The loss is \$20,000; insurance small.

The Great Western Mfg. Co., Leavenworth, Kan., have placed an order with The Case Mfg. Co., Columbus, O., for eight pairs of rolls with patent automatic feed, to be shipped to J. W. Stover, Fredonia, Kan.

The Chicago wheat merchants have on hand more wheat than they want. They are now sending circulars to Iowa and Minnesota, urging the farmers to feed their wheat to hogs. Then they think they could get corn at 20 cents per bushel.

George M. Eckert & Co., millers, of Darmstadt, Illinois, made an assignment on Saturday last, for the benefit of their creditors, with Sebastian Feltsam, of Belleville, as assignee. The liabilities are given at \$25,000, and the assets at \$20,000.

The Case Mfg. Co., Columbus, O., have secured the contract of Van Horn Bros., Larned, Kan., for a full outfit of breaks, rolls, purifiers, scalpers, bolting chests, etc., for a complete roller mill on the Case system. Twelve pairs of rolls with automatic feed will be used.

The Case Mfg. Co., Columbus, O., have been awarded the contract of C. E. Burk, Richmond, Va., for a complete outfit of breaks, rolls, purifiers, scalpers, centrifugals, etc., for a full gradual reduction mill on the Case system. Mr. E. Corbett will superintend the construction of the mill.

The Montreal Witness says that connections with St. Paul by a line north of Lake Michigan should give Canada practical command of one-half of the American wheat fields. The same paper refers editorially to the advantage the Saulte Ste. Marie and Atlantic road gives Canadian steamship lines over New York and Philadelphia for the grain-carrying trade of the Northwest.

The work of constructing the grain elevators at Montreal for the Montreal Terminal Company, is reported to be now well advanced, and will be continued during the winter. The walls have now been raised to a height of about twelve feet, and are six feet thick on the river front of the building, and are composed of a hard and heavy stone, well fitted to resist the force of floods and ice shoves.

The 32x48 Corliss engine at the "A" mills of the George P. Plant Milling Company, St. Louis, has recently been indicated under varying conditions of load with the following results: Making thirty barrels of flour per hour, the indicated horse power is 318.5; making forty barrels of flour per hour, the indicated horse power is 367.9; making sixty-seven barrels of flour per hour, the indicated horse power is 490.0.

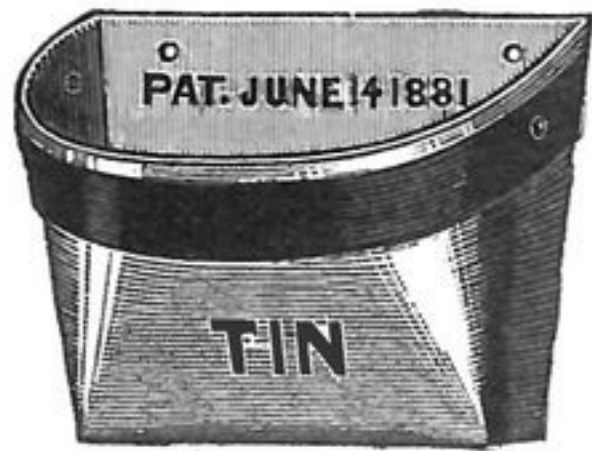
The new milling establishment of the Eldred Milling Company, of Jackson, Mich., is located near, and will receive its power from the engine driving the purifier and centrifugal reel factory of the George T. Smith Middlings Purifier Co. at that place. It will be equipped with Smith purifiers and Smith centrifugals, and is designed to be a model roller mill open to those interested in the most advanced ideas of modern milling. Stevens rolls will be used, the contract for same having been awarded to the J. T. Noye Mfg. Co., of this city.

Barney Brewington, one of the packers employed in the National Mills of Alton, Ill., was arrested on Friday of last week by Deputy United States Marshal Darwin, of Springfield, on the charge of counterfeiting. The officer alleges that Brewington is one of a gang who have their headquarters in or near Litchfield. Considerable spurious coin has of late been disbursed in the vicinity of Litchfield. During the latter part of the summer a detective was there for several days and shadowed the suspected man, but no material evidence against him was discovered. He was a quiet, hard-working man; one of the most faithful employed by the firm, in whose service he had been for the last fifteen or sixteen years. His employers were surprised at his arrest, but after the departure of the officer and his prisoner for Springfield, several of the employes about the place stated that Brewington had been visited frequently by suspicious characters from Litchfield, where he formerly lived and where his family now reside and, that he had on several occasions exhibited a handful of spurious coins, and that on one or two occasions he had been compelled to take back some of the money which he had disbursed. Other arrests are to be made in Litchfield.

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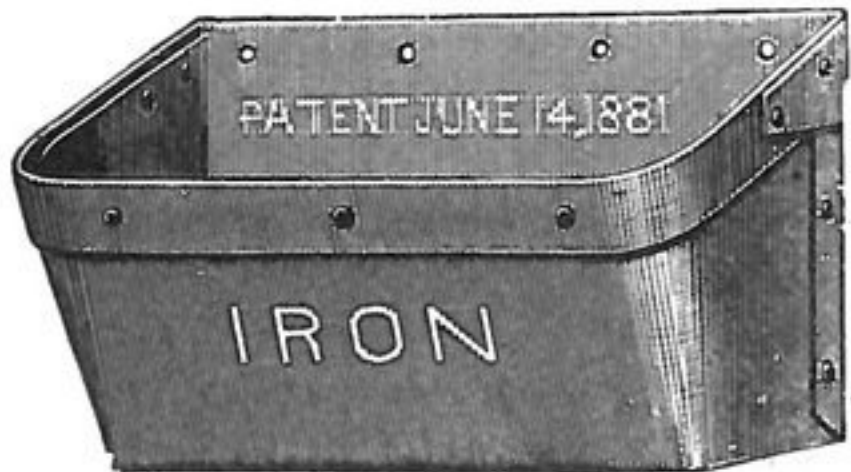
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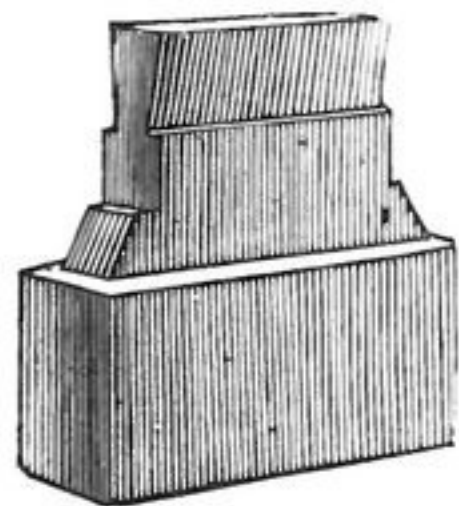
is gaining favor every day. Over 13,000 sold in one day in three different States. My capacity in my new shops is 6,000 per week. I carry 80,000 cups in stock and can take care of any size order.

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19 and 21 E. South St.  
INDIANAPOLIS, IND.

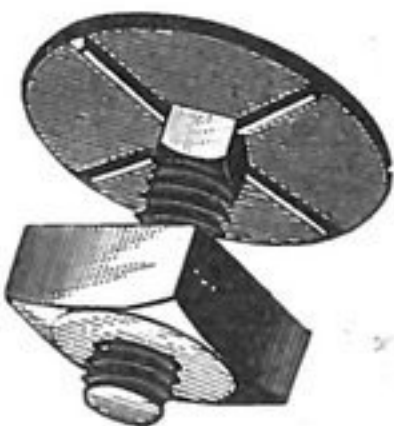


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and Cogs. The Best  
ELEVATOR CUPS



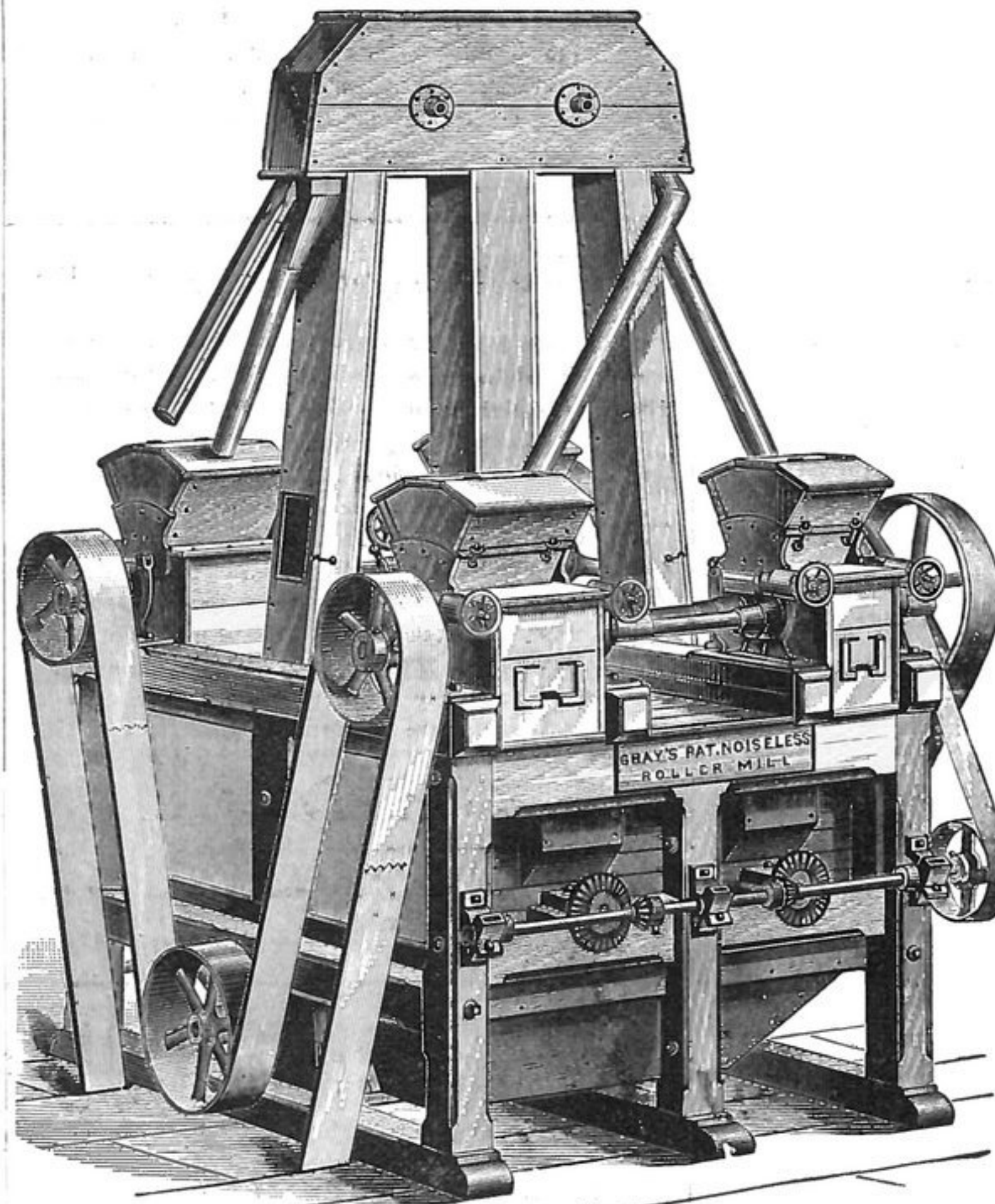
Bolts,  
Cotton &  
Rubber  
Belting,  
Best  
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Corn  
Sheller  
at lowest



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GRAY'S PATENT

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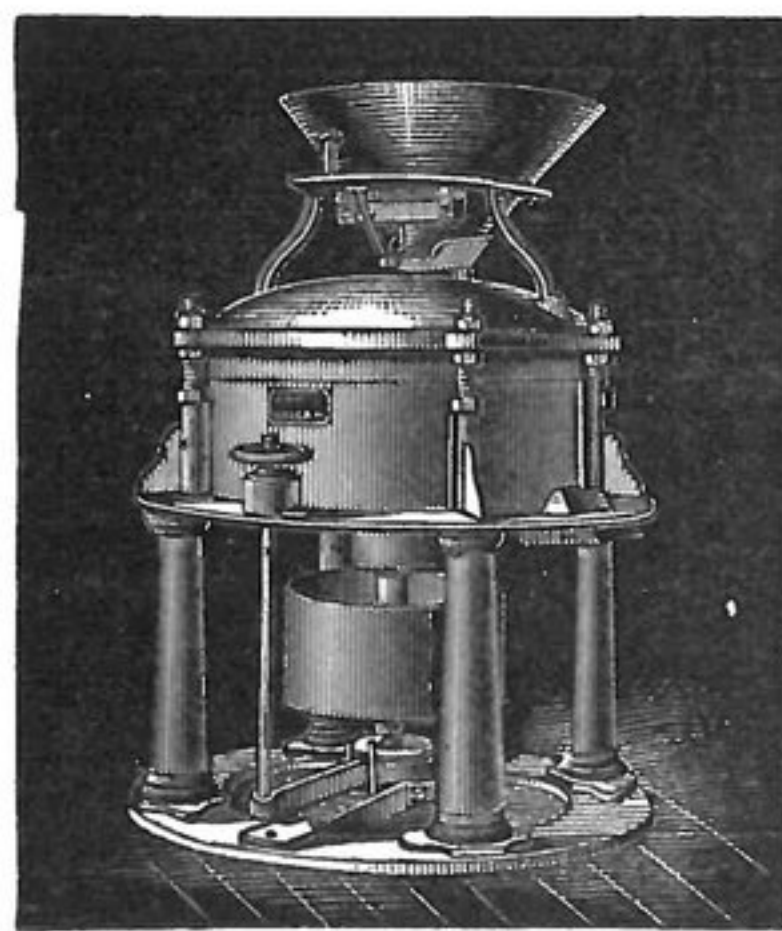
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*Economizes Room,  
Takes Less Power,  
Saves Millwright Labor.*

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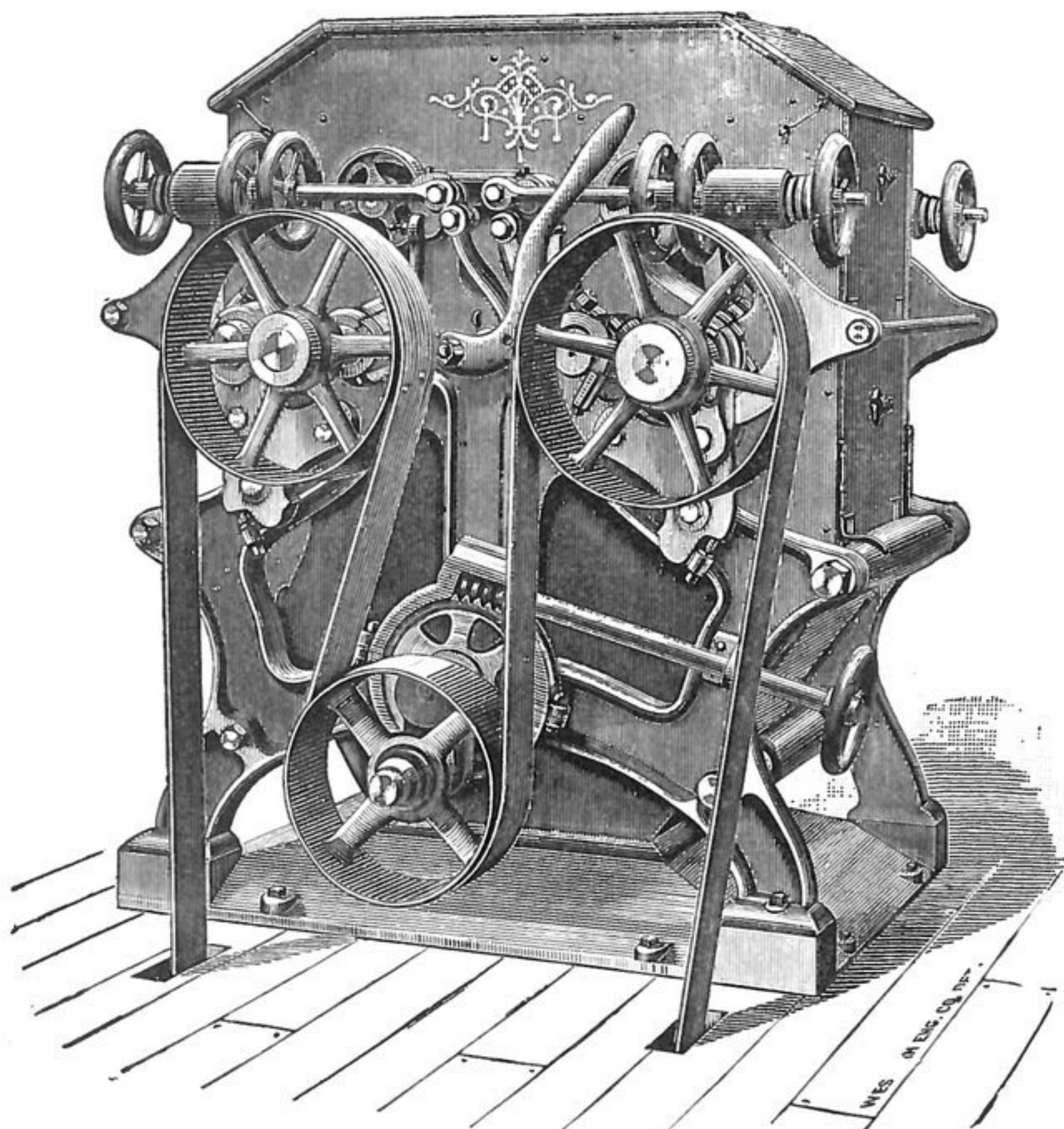
MANUFACTURERS OF  
Munson's Celebrated Portable Mills,  
FOR WHEAT, MIDDINGS, CORN, FEED, Etc.  
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DEALERS IN EVERY KIND OF

**MILLING MACHINERY,**  
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Genuine Dufour Bolting Cloth.  
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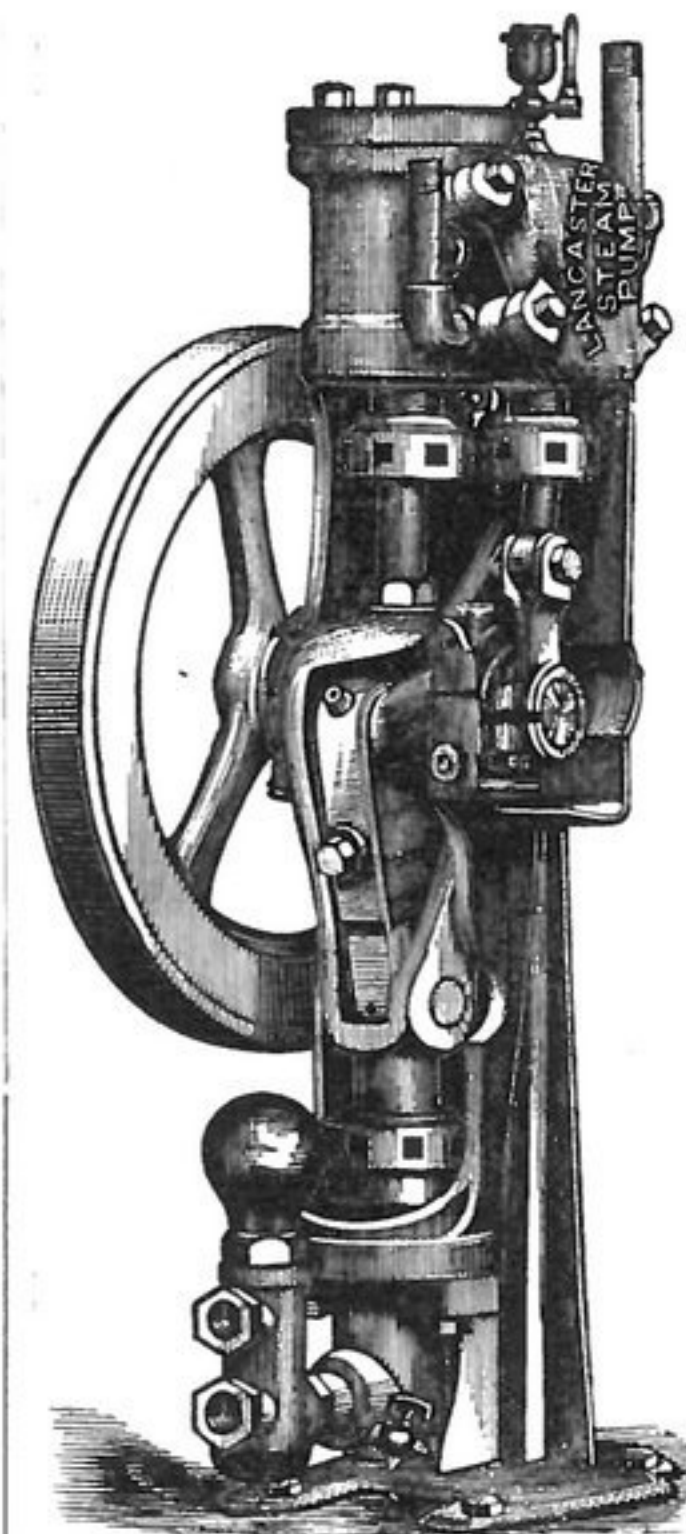
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Has no superior. Universal Tightener, Automatic Feed, Tight Base, Noiseless, with Non-Cutting Corrugations. We also manufacture the Rider Wheat Break, which has no equal for 1st, 2d and 3d Breaks. Send for Reference and Circulars of our Machines.

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*One to 30 Horse Power,  
PRICE, FROM \$125 UPWARDS.*

*Steam Pumps, - \$35 and up.  
Eclipse Tire Benders, 15 " "  
Fan Blowers, - - 18 " "  
Tuyere Irons, - - - \$2.50.*

**THE BEST IN THE MARKET!**

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**THE LANCASTER STEAM PUMP CO.**  
AND MACHINE WORKS,

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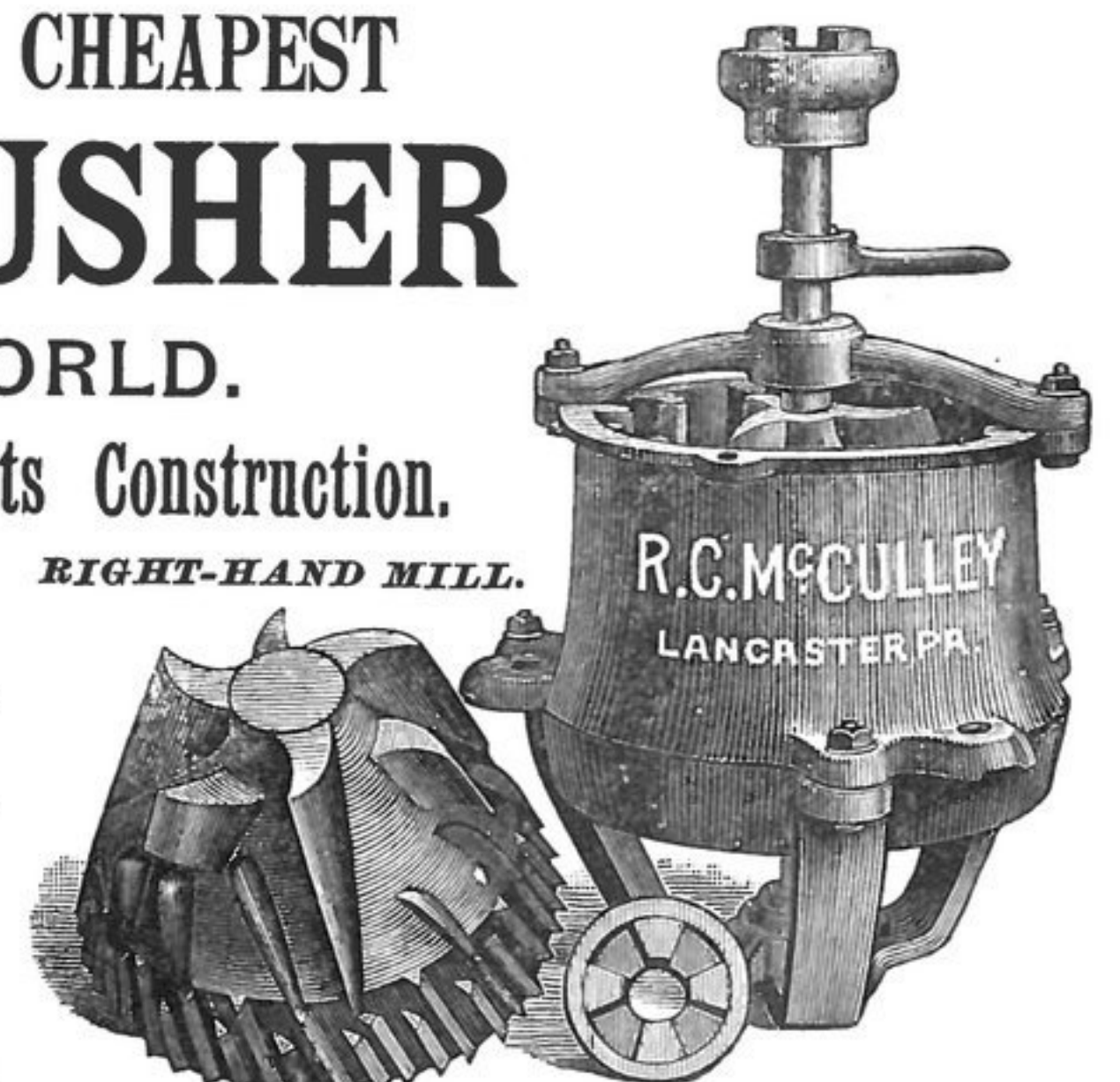
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Steel Being Used in its Construction.

AGENTS WANTED EVERYWHERE.  
CAPACITY 75 BUSH. PER HOUR.

Thousands of these Crushers are now in use, and giving entire satisfaction.

Please Send for Circulars.



**R. C. McCULLEY, LANCASTER, PENN.**



### PLOWING BY ELECTRICITY.

From Oesterr.-Ung. Mueller Zeitung.

EXPERIMENTS in the transmission of power by electricity applied to plowing have been made near Berlin during the first week in November, and in the presence of many distinguished experts, the experiments proved to be a practical success. The electric plow used had been especially constructed for East India, where the prevailing diseases of cattle make the necessary traction power an item difficult to obtain, and where the use of steam power is impossible in many localities, owing to the soft and swampy condition of the soil. While the tests were eminently successful, it remains to be seen from future practical applications on a large scale, whether the electricity can be transmitted economically; but all those who have given any attention to the different systems of steam application, will be able to discover the good qualities of a transmission of power by electricity. There is, for instance, the erection of a stationary motor at a point more or less distant from the field to be cultivated, or the utilization of motors used for industrial purposes, such as steam engines, water wheels, turbines, windmills, etc.; the possibility to allow the use of a plant of the greatest efficiency as compared with the less economical locomobiles; the use of less expensive fuels, such as refuse, straw, sawdust, etc., the transportation of which, to others than stationary motors, is difficult or expensive; the relatively small weight of the appliance necessary for the manipulation of the plow by electricity as compared with steam; and lastly the ease with which electric power can be handled, reducing the three or four men necessary for steam plowing to two or even one in electric plowing.

Of course the loss of power transmitted has hitherto amounted to 50 per cent. and this forms a serious disadvantage to its application, even in the face of so many decided advantages; otherwise the successful manipulation of electric machinery requires technical knowledge like the use of steam motors, and the prices do not vary so very much. But it is not the first time that something which, to a cursory view, appeared expensive and simply conducive to comfort only, on a closer inspection revealed itself as a rational and very decided step in advance. It is to be hoped that agriculturists will take this matter into consideration and determine in a practical manner, whether an electric cultivation of the soil is to be classed among the aids of successful agriculture. The plows in these experiments worked with the greatest precision on a rather heavy soil covered with a growth of grass and weed of several years standing, although the plows had not been designed for such a soil.

### NOTES.

The seeding of winter grain in England has been completed under very satisfactory conditions.

The Agricultural classes of France have £200,000,000 on deposit in the Government savings banks, on which they are paid 4 per cent. interest.

A short series of practical demonstrations and lessons on the chemistry and testing of flour are given in London to millers and bakers by Mr. William Jago, commencing December 6.

The home deliveries of wheat in the United Kingdom for the first ten weeks of this season, to November 15, are officially estimated as 45,169,000 bushels, compared with 42,491,000 last year, 37,143,000 in 1882, and 36,040,000 in 1881.

Numerous cases of poisoning have recently occurred in the village of Hernal, near Vienna. Altogether 60 persons have been taken ill, and many of them are in a dangerous condition. Up

to the present, however, there have been no deaths. The fatality is attributed to the carelessness of a corn-dealer, a quantity of rat poison having become mixed with flour used by the victims.

In Germany the winter has set in apparently in earnest according to the latest reports, but the markets have not gained in strength even where snow has fallen. The imports of the German Empire are expected to exceed the estimates made at the Vienna Congress. There will be large wants of rye which Russia possibly may have difficulty in supplying. In that case the poorer sorts of wheat would be used by those who ordinarily eat rye.

The weekly trade review of the *Economiste Francais* remarks that "French commerce is decidedly in misfortune's way. After the exports from one part of the French coast have been regarded with distrust in foreign ports, the Brittany ports are about to be subjected to the same suspicion through the outbreak of the cholera epidemic at Nantes. Already the state of French commerce is so precarious that this fresh trouble might well have been spared."

A serious fire broke out in the large mill of Mr. H. H. Gambling, at Yarmouth, on the morning of the 7th inst, at about eight o'clock. It originated in the stove-room at the top of the building, on the west side, but was quickly extinguished by the local fire brigade, the fire being confined to the top of the building. Considerable damage was, however, done to both building and stock, but the machinery was saved, and the loss, which is estimated at over £2,000, is covered by insurance. This was the thirty-first fire in British and Irish flour mills during the present year.

Mr. H. Simon, of Manchester, Eng., has started the United District Flour Society's mills, in Sowerby Bridge very successfully, and to the greatest satisfaction of the directors. The plant has a capacity of about 1,500 sacks per week. Ever since starting they were not stopped once, nor did the slightest choke occur. The erection of this large mill was finished in about eight weeks, and it would have been ready to start a fortnight sooner, but for an accident which happened to two special machines, and which delayed their being put in place in time.

Mr. J. H. Chatterton writes to the *Millers Gazette* date Nov. 23. "This morning I have noticed the thirty-third fire in a corn mill this year, Messrs. T. C. Greensmith & Co., Hilton Corn Mills, near Derby, resulting, however, only in the destruction of an elevator head and some belting, &c. Having for years past strongly advocated buckets of water being kept in every mill that I get insured, their utility has again been demonstrated and £7,000 or £8,000 saved to the country. The friction of elevators is undoubtedly one of the causes that are frequently returned as unknown, owing to their spreading to the roof before being discovered."

The grain report of the Vienna Lloyd has the following estimates of grain production, exports, and necessary import of the different countries, for the current year:

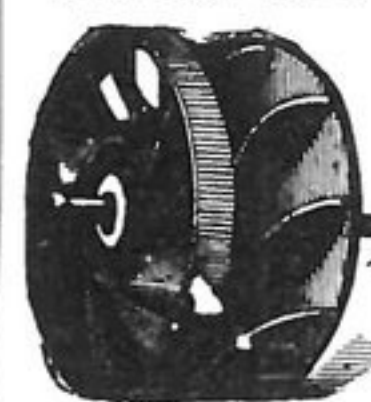
	In Million Hectoliters.		
	Production.	Import.	Export.
France.....	95.0	17.0	....
England.....	36.0	48.0	....
Belgium.....	8.0	4.0	....
Germany.....	40.0	4.0	....
Switzerland.....	0.8	4.0	....
Italy.....	35.0	5.0	....
Spain and Portugal.....	39.5	5.0	....
Greece.....	1.0	0.5	....
Holland.....	2.0	1.0	....
Denmark.....	1.0	....	....
Sweden and Norway.....	1.0	1.0	....
West Indies and China..	2.0	8.0	....
United States of America	175.0	....	58.0
Russia.....	70.0	....	18.0
Austria-Hungary.....	44.0	....	2.5
Roumania.....	11.0	....	4.5
Turkey.....	14.0	....	4.0
Servia.....	2.5	....	1.0
India.....	40.0	....	9.0
Australia and Chili.....	10.0	....	6.5
Canada.....	14.0	....	3.0
Egypt.....	5.0	....	1.5
Total.....	646.8	97.5	108.0

According to this rather arbitrary compilation, the production of wheat exceeds the demand only by 10.5 million hectoliters, and the figures clearly demonstrate how different results can be arrived at by looking at a subject from a peculiar standpoint.

A member of the Austrian Reichsrath believes in "international protection against American and Russian competition," and says with considerable warmth that Russia and the United States "force their way into commerce, flood Europe with farm products, and then close their markets to European manufactures. Europe would over-

look a few bad features arising from the wholesale shipment from Russia and America, and receive with open arms their production if the latter could only be paid for by European manufactures. The trouble, the injustice, lies in the want of reciprocity." Hence the increasing demand for the "protection" of European farmers against the depression in value arising from competition with their brethren in America.

### DeLOACH WATER WHEELS.



Simplest and Cheapest Manufactured, and have received the unqualified endorsement of all who have used them. Every small mill can afford one. Send for large illustrated Catalogue of Wheels and general Mill supplies. "The Star (Grill)" Mill stones from our quarry are unsurpassed and sell remarkably low. A. A. DeLoach & Bro., Atlanta, Ga. U. S. A.

### TOOL FOR CUTTING, LEVELING & POLISHING THE FURROWS & FACE OF MILLSTONES

Eight inches long, 2½ inches wide, 1½ inches thick. Received the highest and only Award given to Polishers at the Millers' Exhibition, Cincinnati, Ohio, June, 1880. For facing down high places on the buhr, this tool has no equal, and can be done much better and in one-sixth the time than with the mill pick. It is much larger, cuts better, can be used on either face or furrow, can be used until the corundum is entirely worn out on one side and then turned on the other side. Has over four times the amount of corundum and when the corundum is worn out can be replaced in the handle at a small cost. Sent by express, \$3.50. Satisfaction guaranteed, or money refunded. Address



### HORACE DEAL, - BUCYRUS, OHIO.

### THE "SALEM" ELEVATOR BUCKET.

SHOVEL EDGE  
Seamless Rounded Corners  
CURVED HEEL



RUNS EASY  
STRONG & DURABLE  
EMPTIES CLEAN.

### W. J. CLARK & CO., SOLE MANUFACTURERS, SALEM, OHIO.

New York Office and Salesroom, No. 9 Cliff Street.



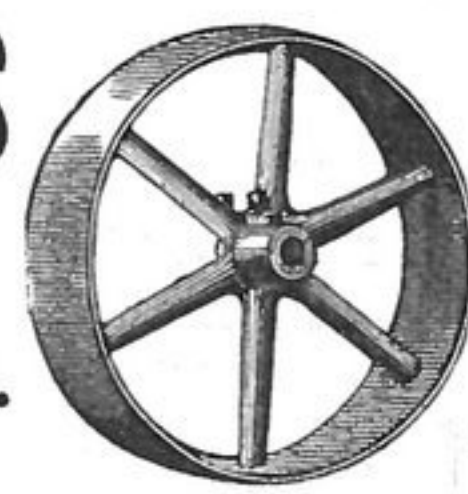
### CORN & COB CRUSHERS

PRICE, \$15.00.

Send For Circular.

SHAFTING, PULLEYS & HANGERS.

Pulleys a Specialty, Large or Small. Address,



### T. B. WOOD & SONS, CHAMBERSBURG, PA.

## More Evidence That The Case Machines Still Lead.

### READ THE FOLLOWING LETTER FROM ONE OF OUR CUSTOMERS:

CARROLTON, O., Dec. 2, 1884.

CASE MFG. CO., COLUMBUS, O.

Gentlemen: After making up our minds to change to the Roller System, we were visited by agents from other roller firms, who, in every instance condemned your system, which led us to believe that they were jealous of you, and now we are fully convinced of the fact. Our mill is now running on the Case system, and from the first start we have had no trouble, not having to change a spout or any cloth. Our flour is excellent and we will put it against any in the State, our yield is splendid, not using over 4½ bushels to the barrel, and while the mill was built for 60 bbls. in 24 hours, we are making 80 bbls. without any trouble. Your Rolls, Purifiers, Centrifugal Reels, and Scalpers are first-class, while your automatic feed is "a daisy." We wish you a prosperous future and extend an invitation to all millers to call and see us.

Yours Truly, M. & K. HARDESTY.

We can do as well for you as we have for the above firm. If you contemplate making any changes, or are in need of anything in the mill furnishing line, it will pay you to confer with us before placing your order. Address,

## THE CASE MANFG. COMPANY

COLUMBUS, OHIO, U. S. A.

# JONATHAN MILLS UNIVERSAL FLOUR DRESSER.

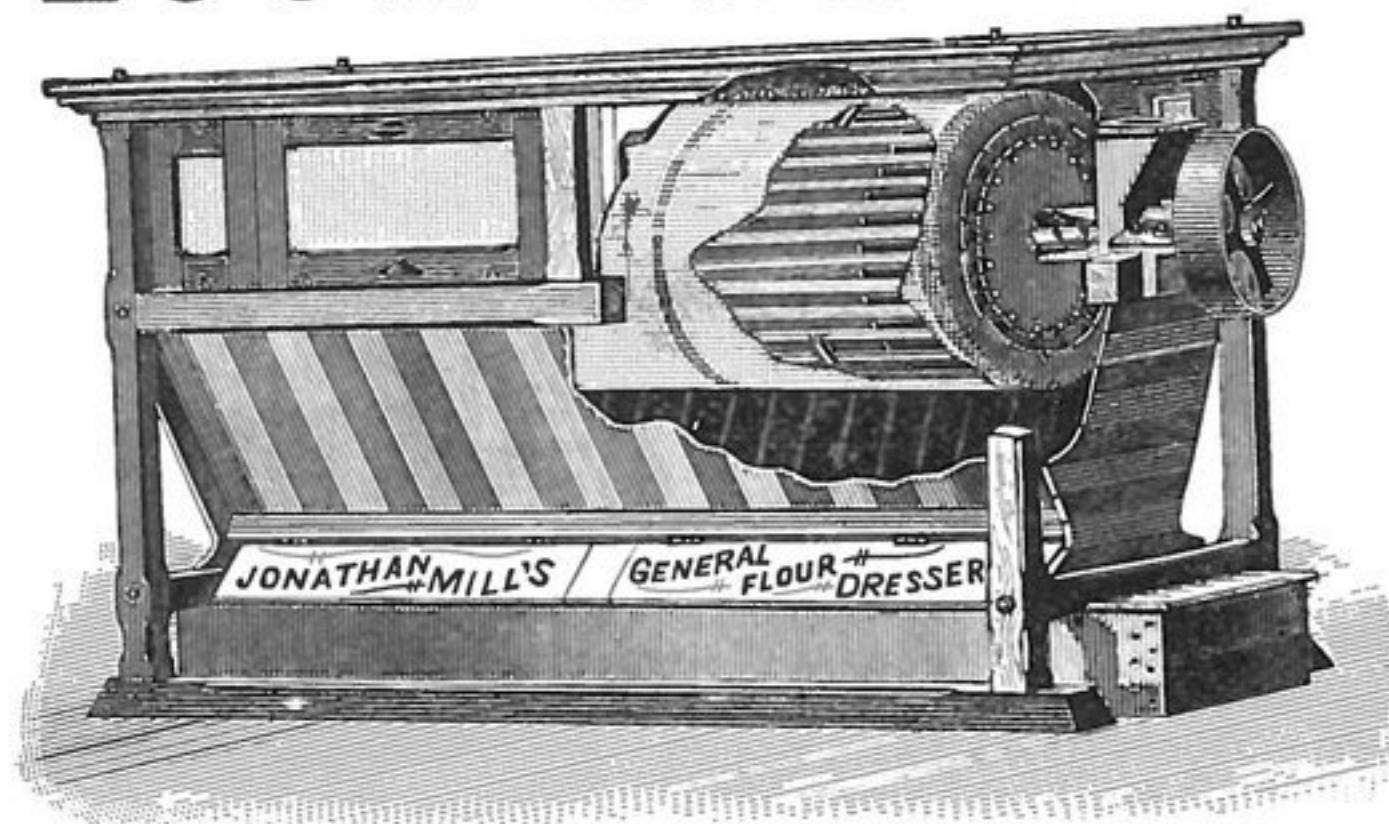
Guaranteed to be superior to any other bolting device for clear, clean bolting or rebolting of all grades of Flour.

**FINELY DESIGNED AND MECHANICALLY CONSTRUCTED.**

SLOW SPEED. OCCUPIES SMALL SPACE, AND HAS IMMENSE CAPACITY.

For Price List, Sizes, and Dimensions, Send to  
**THE CUMMER ENGINE CO., CLEVELAND OHIO.**

Send also for 150 Page Catalogue Describing their Engine



## THE BRADFORD MILL CO.

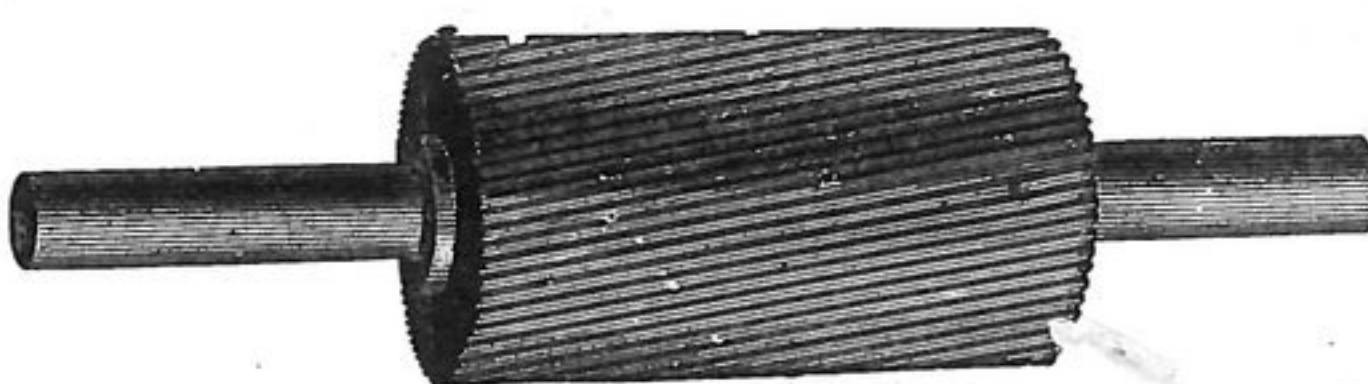
Manufacture a Complete Line of

**FLOUR MILL MACHINERY,**

*Including Portable Corn and Middlings Mills.*

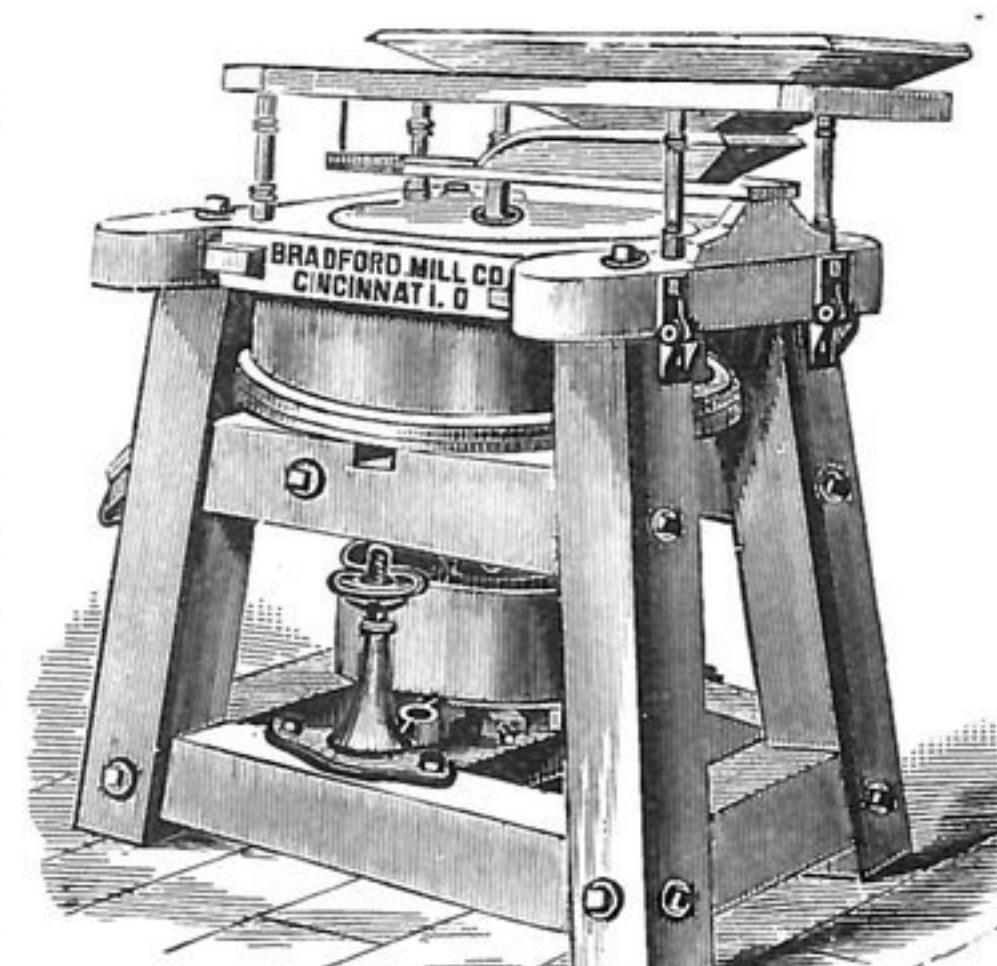
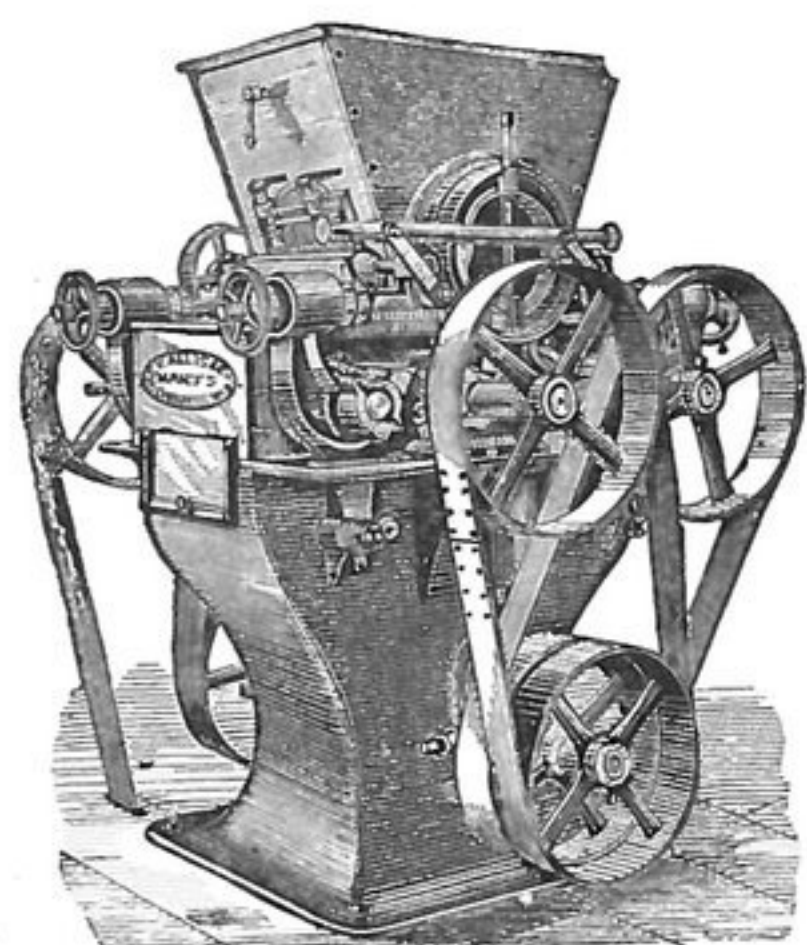
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**PORCELAIN  
ROLLS  
RE-GROUND.**

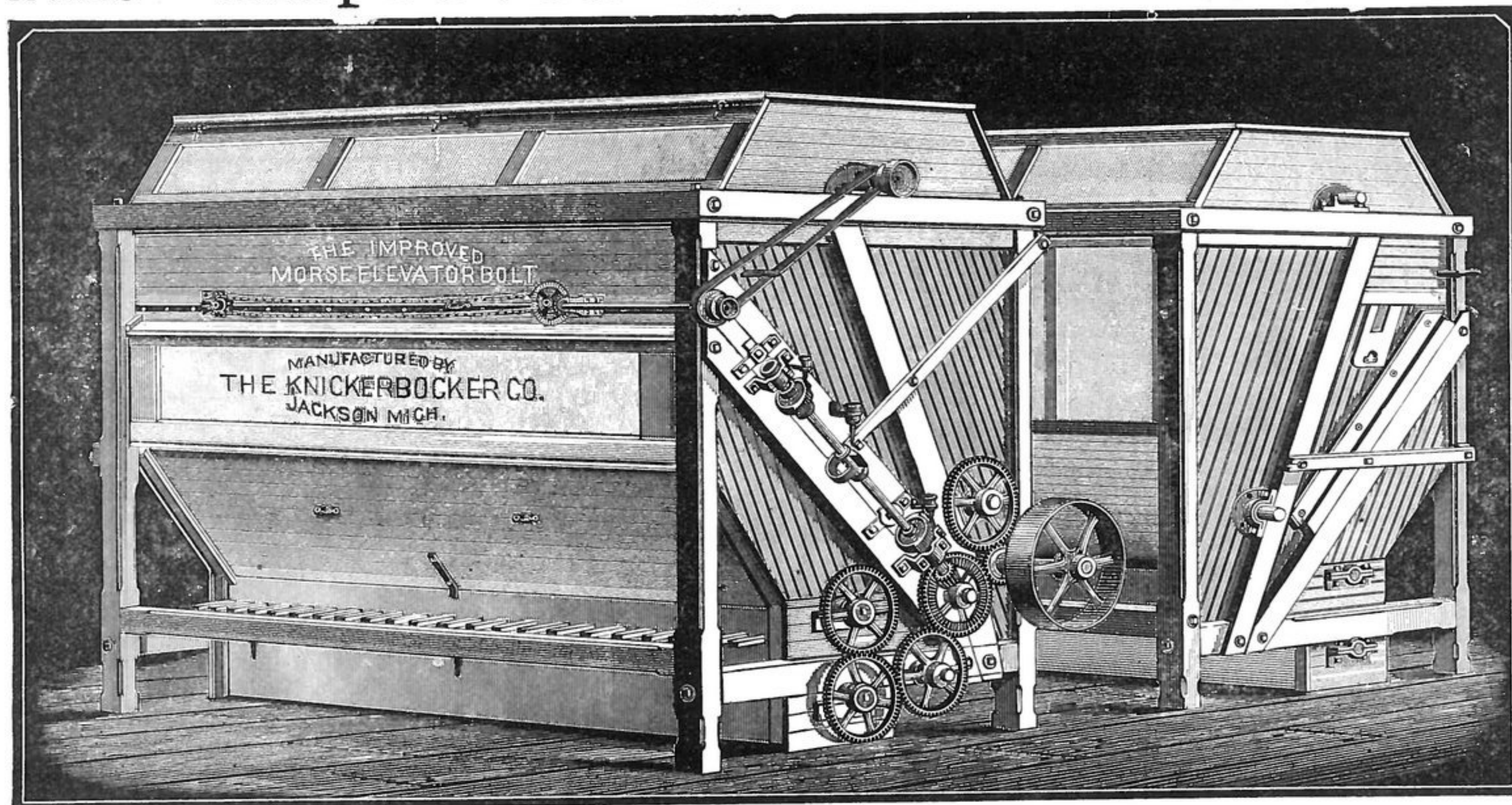


**CHILLED IRON  
ROLLS  
Re-Ground and  
Re-Corrugated.**

**EIGHTH AND EVANS STREETS, - CINCINNATI, OHIO.**



## The Improved Morse Elevator Bolt.



DEMONSTRATED IN OVER 100 MILLS TO BE THE BEST BOLTING DEVICE KNOWN.

**THE KNICKERBOCKER CO., JACKSON, MICH.**

**JOHN C. HIGGINS & SON,**  
Manufacturers and Dressers of  
**MILL PICKS,**  
168 KINZIE ST., CHICAGO.



GOLD MEDAL—SPECIAL, 1ST ORDER  
OF MERIT.



Send for Circular and Price List.

Picks will be sent on 30 or 60 days' trial to any responsible Miller in the United States or Canada, and if not superior in every respect to any other pick made in this or any other country, there will be no charge, and I will pay all express charges to and from Chicago. All my picks are made of a special steel, which is manufactured expressly for me at Sheffield, England. My customers can thus be assured of a good article, and share with me the profits of direct importation. References furnished from every State and Territory in the United States and Canada.

**Toledo Mill Picks and Stone Tool Mfg. Co.**



Manufacturer and Dresser of  
**Mill Picks.**  
Made of the very best double-refined English cast steel. All work guaranteed. For terms and warranty, address **GEO. W. HEARTLEY, No. 297 St. Clair Street, Toledo, O.** Send for Circular.

N. B.—All Mill Picks ground and ready for use (both old and new) before leaving the shop. No time and money lost grinding rough and newly dressed Picks. All come to hand ready for use.

ALSO MANUFACTURERS OF  
SHAFTING, PULLEYS, HANGERS, COUPLING  
AND MACHINE JOBBING.

# CAREY'S CELEBRATED MILL PICKS

All Warranted made of Best Quality Cast Steel 50 cents per pound.  
All Sizes in Stock.

**SOLID COTTON BELTING AND ELEVATOR BUCKETS.**

Send for New Catalogue and Price List Just Out, to

**SAMUEL CAREY, No. 17 BROADWAY, NEW YORK.**

CAREY'S DOUBLE ANCHOR BOLTING CLOTH.

HAS BEEN AWARDED  
**FIRST AND ONLY PREMIUM**  
 AT THE  
 Millers' International Exhibition.



Office of THE MILLING WORLD.  
 Buffalo, N. Y., Dec. 10, 1884.

As the year draws to a close it is not surprising, perhaps, that one should anticipate greater conservatism in the markets, and while confidence is freely expressed in the future, and a higher range of values confidently looked for after the holidays, there is not perceptible the usual falling off in activity, while at the same time there is apparent much apathy, trading seemingly being kept up not so much because there is profit in it, but because it seems necessary to at least make a show of doing business.

The market at large has had to deal with unfavorable foreign market news, with the London cables 6d@9d lower for red winter and 6d lower for California, the Liverpool cables off 1d and the private news received later generally of unfavorable purport. Another item of disadvantage has been the heavy receipts of wheat at Chicago, aggregating 1,107 cars, about the largest total ever reported. At the interior generally the marketward movement of wheat has not been larger than it was a week ago. Word from Minneapolis indicates a general resumption of work by the mills lately shut down or working on short time. All the mills there are expected to be grinding on full time. The exports from New York yesterday foot up the respectable aggregate of 229,000 bush wheat and 22,600 bbls flour, with a fair demand for more ocean tonnage.

The receipts of flour reported at the New York market sum up 32,923 barrels, of which 23,700 barrels are marked through for export, leaving only 16,223 barrels for this market to handle. But with trade as it is this is all-sufficient; in fact, the demand is not large enough to prevent some accumulation in stocks, and the tendency of values is rather in buyers' favor, without being notably lower. Exporters are in the market and picking up the low-priced flour, while the low price of the best goods is bringing a larger proportion of the local trade demand to the patents. The intermediate grades are rather weak. For rye flour, the demand is moderate, and the market still shows a feeble tone at quotations appended. Buckwheat flour continues quiet at from \$1.90@2.15 for the general business, with \$2.20 an extreme price for fancy lots. Corn goods continue in moderate demand at steady prices. Mill feed fairly active and firm at former prices.

#### BUFFALO WHEAT MARKET.

Buffalo, Dec. 10, 1884.

Our wheat is very dull at present. The millers on the line of canal took advantage of low canal freights, to lay in a good stock of wheat, and are now out of the market. This fact, and the general depression in all trades throughout the country, causes a gloomy feeling in our grain trade. Choice No. 1 sold yesterday at 80c, which is the lowest price this grade has sold for. No. 1 Northern is held higher in proportion, owing to the light stock here, and the demand for it in the Eastern markets, though it is offered at 78c. No. 1 white offered at 80c. here, though the Detroit market is firm at 75½c, which would cost here 82c. Red winter No. 2 sold at 80c; same grade (Buffalo inspection) sold at 77c. Don't look well for Buffalo inspection. Corn dull. Good new mixed offered on track at 41½c. No straight No. 2 offering, though what is claimed as No. 2 held at 45c. Oats very little doing; No. 2 white on track 31½c.

The following statement shows the movement of Duluth wheat of the crop of 1884:

	Bus.
Total amount received at Buffalo, .....	6,837,545
Shipped from Duluth to other ports:	
Milwaukee.....	121,000
Chicago.....	51,000
Cleveland.....	35,000
	207,000
Shipped from Duluth to Canada ports:	
Kingston.....	360,547
Montreal.....	96,500
Toronto.....	16,000
Midland.....	17,000
	490,047
Total shipment from Duluth	7,534,592
J. S. McGOWAN & SON.	

## DUFOR & CO.'S CELEBRATED BOLTING CLOTH.

#### FOREIGN EXCHANGE.

The market for sterling closed weak and without activity, the decline in rates being on account of the absence of demand. Posted rates closed at 4.82 for 60 days' and 4.86 for demand. The actual rates ranged: At 60 days' sight, 4.81@4.81½; demand, 4.85@4.85½; cables, 4.85½@4.86¼, and commercial, 4.79½@4.79¾. Continental exchange quiet; francs, 5.25@5.24½ and 5.21½@5.21¾; reichsmarks, 94½@94½ and 95@95½; guilders, 39½ and 40½. The closing rates were as follows:

	60 days.	30 days.
London.....	4 82	4 86
Paris francs.....	5 23½	5 20
Geneva.....	5 22½	5 19½
Berlin, reichsmarks.....	94½	95¼
Amsterdam, guilders.....	40	40½

#### BUFFALO MARKETS.

**FLOUR**—City ground clear Northern Pacific spring \$4.50@5.00; straight Northern Pacific spring, \$5.00@5.50; amber, \$5.00@5.15; white winter, \$4.75@5.25; new process, \$5.50@6.00; Graham flour, \$4.00@5.00. Western straight Minnesota bakers, \$4.75@5.00; clear do, \$4.50@5.00; white winter, \$4.75@5.00; new process, \$6.00@6.50; low grade flour, \$2.50@4.00. **OATMEAL**—Ingersol \$5.75; Bannerman's \$6.00; Akron \$6.25. **CORNMEAL**—Coarse, \$1.00; fine, \$1.10 per cwt. **RYE FLOUR**—In fair demand \$4.00@4.25. **WHEAT**—Quiet. Sale 8,000 bu No. 1 hard Northern Pacific late Monday afternoon at 80c at the Call Board 83c asked cash, 81c Dec., 81c year. Winter wheat quiet; sale one car-load No. 1 white at 80c, one do No. 2 red at 80c, three do milling red at 74c on track. **CORN**—Steady. Sales three car-loads new No. 2 at 45c, four do new mixed at 43c, and one do new low mixed at 42c, all on track. Old No. 2 held at 46½@47c. **OATS**—Dull. Sale one car-load mixed at 28c, on track. **BARLEY**—Demand fair. Sales ten car-loads Nebraska at 64c and five do bright Canadian at 71c. all on track. **RYE**—Western nominal at 60c and State at 55c.

#### JAMES S. MCGOWAN & SON, SHIPPING AND COMMISSION MERCHANTS.

Choice Milling Wheats a Specialty

Room 60 Board of Trade Building.

BUFFALO, N. Y.

No Charge for Inspection

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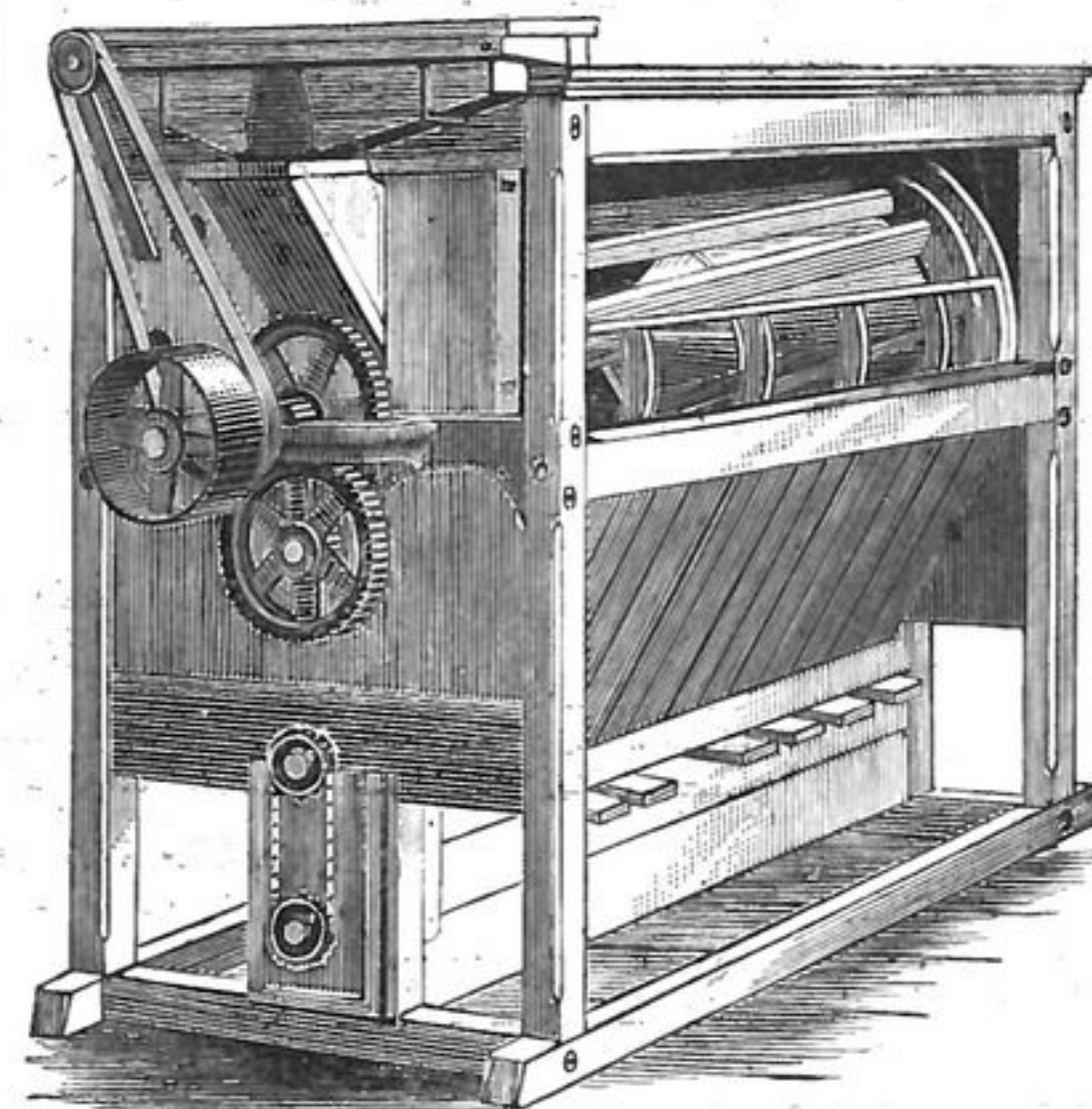
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 FROM RELIABLE DEALERS.

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IS BEYOND QUESTION THE  
**BEST IN THE MARKET**  
 AND IS SOLD FOR  
**THE LEAST MONEY**  
 While the operation of every  
 Machine is  
**FULLY GUARANTEED.**

Send for Prices, Lists of  
 Testimonials, and Descriptive Catalogue.

READ THIS LETTER. THEY WILL DO AS WELL FOR YOU.

OFFICE OF LUDLOW MILLS, DAYTON, OHIO, April 23, 1884.

MR. C. N. SMITH.

We have been running the two Centrifugals since February, the first without any stop whatever, and are well pleased with them. We throw less stock on our Rolls, and make four to five per cent. less Low Grade than before we had the Machine. You can refer any one to us and we will be pleased to give it a good send off. Wishing you success, we remain,

CHAS. SHUEY, Head Miller.

Yours respectfully,

CHAS. S. DURST, Supt.

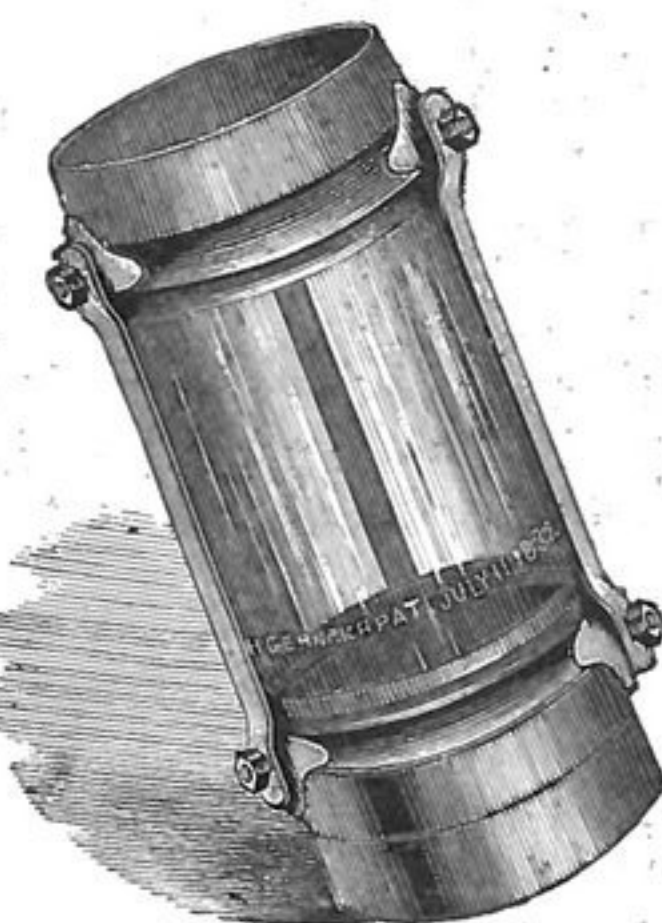
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## C. N. SMITH, DAYTON, OHIO

MANUFACTURER OF MILL FURNISHINGS.

## GEHRICH'S PATENT GLASS TUBE JOINTS

AN IMPORTANT INVENTION FOR MILLERS.

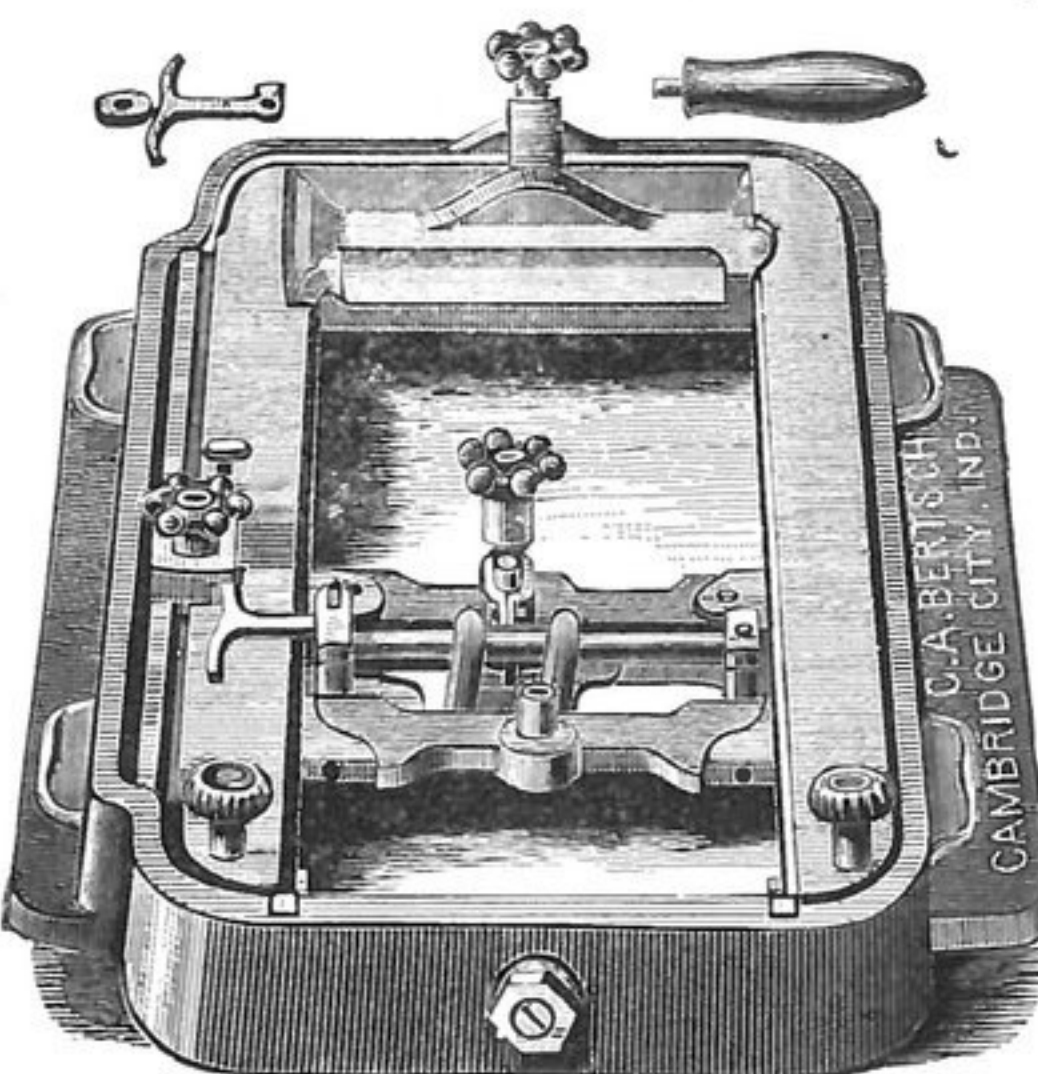


This invention consists of a Glass Tube Joint, which can be made to correspond in size to and be inserted in any tin spout used to convey grain, meal, etc., in the operation of Grinding Flour and other substances. A section of the spout is thereby *Rendered Transparent*, enabling the miller, or any one passing by, to see at a glance whether the contents of the spouts are properly running. By the use of this appliance the necessity of frequently opening spouts is avoided, and the consequent saving of time and flour is very important in an economical point of view. These Glass Tube Joints have given the most complete satisfaction, and are esteemed as an indispensable requisite wherever they have been applied. Full information furnished on application to the inventor.

H. GEHRICH, 54 Rutgers St. NEW YORK CITY.

**GOVERNORS** { For Water Wheels } Cohoes Iron Foundry and Mch. Co.  
 Send for Catalogue. Cohoes, N. Y.

## Teetor's Patent Quick Adjustable Diamond Dresser



The A Machine. 29 inches long, 18 inches wide. Weight, 145 pounds. Same width carriage as the B machine.  
 The B Machine. 33 inches long, 19 inches wide. Weight, 170 pounds.

A revolution. No Screw Feed, no Ratchet Wheel, Paul Springs or extra Fixtures to contend with. A complete Machine warranted to be much the best and most complete Dresser in the world, will guarantee better satisfaction than any other of its class. Also that more work can be accomplished with less trouble and expense, or otherwise subject to be returned. The best of references given. Machines have been in use over four (4) years, and there has never been a call for any repairs for any machine in use. Parties are surprised as to the merit and simplicity of the machine, and say it is a revolution compared with others. Also as to adjustments which are all accomplished quick and easily by hand without the use of any tool. A positive feed which is similar to a friction feed, the only practical feed ever invented for a diamond dresser feed; is instantly reversed to cut right or left while in motion, also to cut fine or coarse. Can cut over one thousand cuts per inch. Consequently can do much deeper facing especially with a dull diamond once going over with one or two diamonds. By finer feeding while in motion, need not raise the diamond on account of a raise or hard spot on the face, in which case it will cut an even depth, also when the diamond is fed to either side of carriage, as it is so constructed. In this so many fail. The machine is ample wide so as to set over the spindle. All the feed mechanism is hardened steel. All the wear can be taken up. Specially warranted as represented. State size of burrs. Circulars giving full description forwarded.

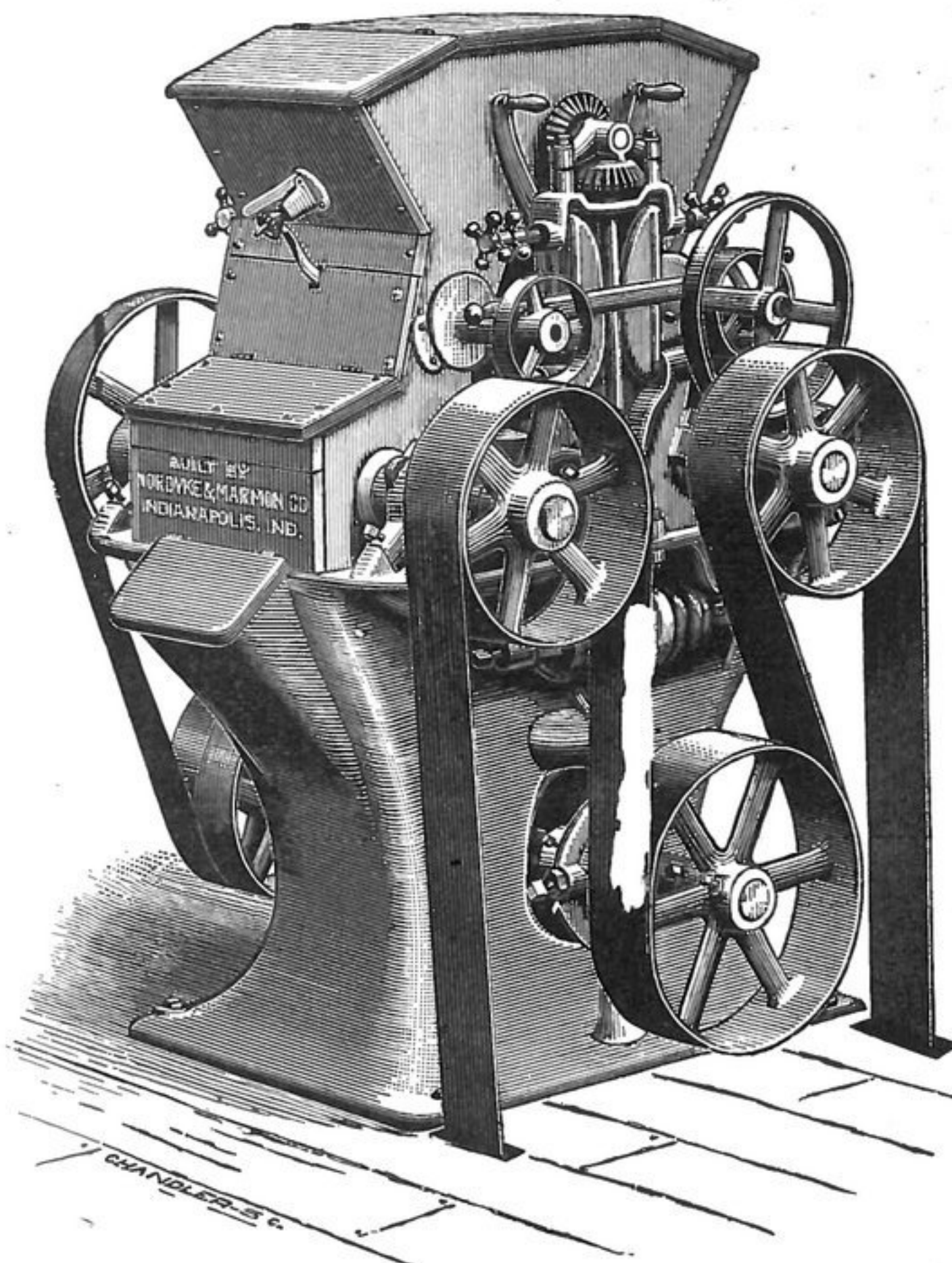
C. A. BERTSCH,  
 CAMBRIDGE CITY, IND.

# NORDYKE & MARMON CO., INDIANAPOLIS, IND.

Builders from the Raw Material of

## ROLLER MILLS, CENTRIFUGAL REELS, FLOUR BOLTS.

WE ARE THE SOLE OWNERS FOR THE UNITED STATES OF ALL THE PATENTS UPON THIS ROLLER MILL.



*This Is the Only Roller Mill Made Having All the Essentials Needed In Successful Milling.*

500 BARREL MILL IN MISSOURI.

*Read what an Old Miller who has Thirty-Four Pairs of these Rolls in Constant Use, Says:*

MESSRS. NORDYKE & MARMON CO., INDIANAPOLIS, IND.

*Gentlemen:* In regard to the workings of our new mill erected by you, will say it is fully up to and beyond our expectations. Our average work is fully 33 per cent. over your guarantee. Since starting our mill last July we have had no complaint of our flour from any market where sold. It gives universal satisfaction, and we have it scattered on the trade from Chicago to Galveston, Texas. Our yields are all that are attainable. We have tested it on both Spring and Winter wheats with satisfactory results on both varieties. Since the mill was turned over to us we have not changed a spout or a foot of cloth, nor have we found it required to make any changes. We have run as long as six days and nights without shutting steam off the engine, not having a "choke" or a belt to come off. The mill is entirely satisfactory to us, and for a fine job of workmanship, milling skill and perfection of system, we doubt if it is surpassed in the United States to-day. It is certainly a grand monument to the ability and skill of Col. C. A. Winn, your Milling Engineer and Designer. You may point to this mill with pride and say to competitors, "You may try to equal, but you will never beat it." Wishing you the success that honorable dealing deserves, I am,

OFFICE OF DAVIS & FAUCETT MILLING CO.,  
ST. JOSEPH, Mo., Nov. 28th, 1883.

Yours, etc., R. M. FAUCETT, PRES.

500 BARREL MILL IN ILLINOIS.

MESSRS. NORDYKE & MARMON CO., INDIANAPOLIS, IND.

*Gentlemen:* We started up our mill in June last year, and it gives us pleasure to say that your Roller Mills are doing splendid work and give us no trouble. Your milling program required no changes, and concerning yields, we get all the flour from the offals, and we sell our best grades in the principal markets of the United States at the highest prices offered for any flour. All the machinery made by you is first-class, and we would not know where to purchase as good.

OFFICE OF DAVID SUPPGER & CO.,  
HIGHLAND, ILL., Jan. 10, 1884.

Yours respectfully, DAVID SUPPGER & CO.

125 BARREL MILL IN INDIANA.

NORDYKE & MARMON CO., INDIANAPOLIS, IND.

*Gentlemen:* The 125 barrel All Roller mill you built us has been running all summer, and does its work perfectly. Before contracting with you for this machinery we visited many Roller Mills throughout the West and Northwest, built by the different leading mill furnishers, and from all we could see, those built by you seemed to be giving the best satisfaction, and this is why we bought our machinery of you. Our mill comes fully up to your guarantees, and the capacity runs over your guarantees. The bran and offal is practically free from flour, and our patent and bakers' flour compares favorably with any we have seen elsewhere. I don't think anyone can beat us. Your Roller Machines are the best we have seen; they run cool, and the interior does not sweat, and cause doughing of the flour. Judging from our success, we would recommend other millers to place their orders with you.

LAFEL, MADISON COUNTY, IND., Jan. 10, 1884.

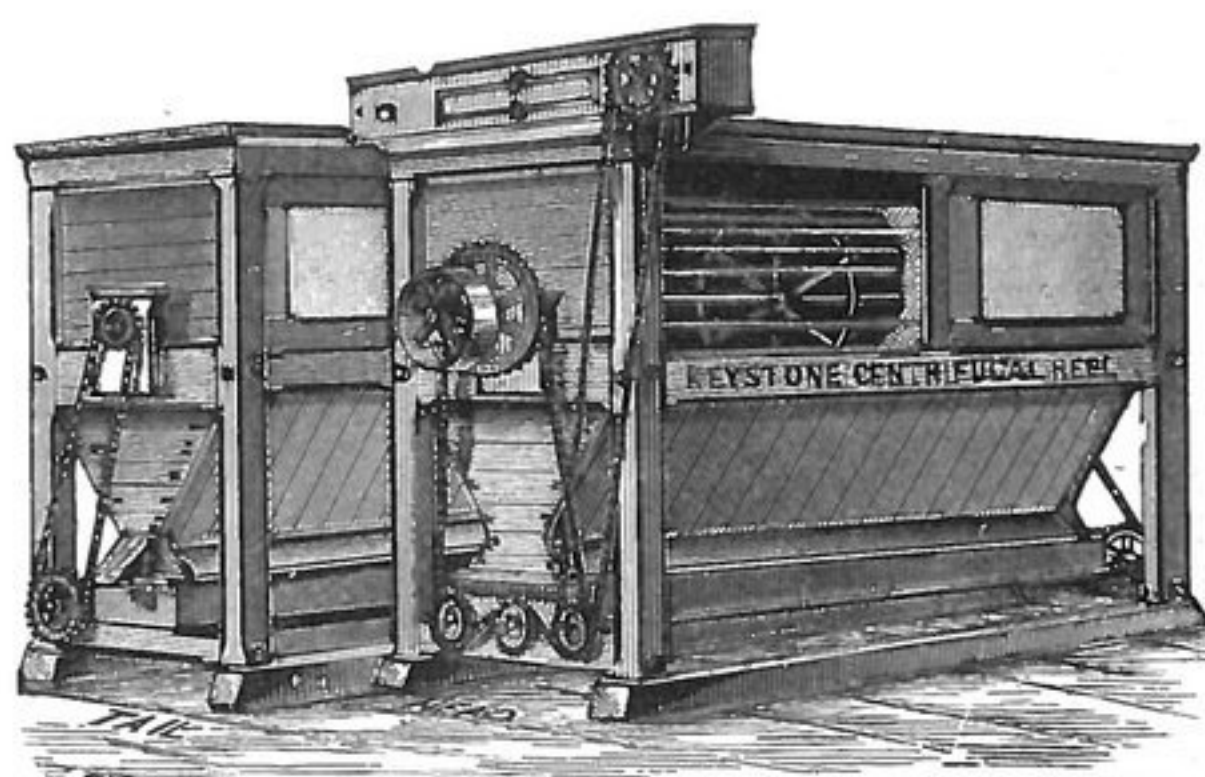
Yours truly, J. T. FORD.

*Letters on file in our office from a large number of small roller millers giving as favorable reports as above. A portion will be published as occasion demands.*

**SPECIAL MILLING DEPARTMENT!**

## Mill Builders & Contractors--Guarantee Results

Motive Power and Entire Equipment of a Modern Mill Furnished under one Contract.



## KEYSTONE CENTRIFUGAL REEL

—PATENTED MAY 6th, 1884.—

*Drag Brush Feed, Tightest Heads, Best Results. Cheapest and Best on the Market. Adapted to all Kinds of Milling. The New Drag Feed Thoroughly Protects the Silk. Sent on Trial to any Responsible Miller.*

## ROLLER MILLS, SCALPING REELS, PULLEYS, SHAFTING AND ALL KINDS OF MILL IRONS.

Full Stock of Dufour and Dutch Anchor Bolting Cloth.

BEST QUALITY FRENCH BURR MILLSTONES, FOR MIDDINGS, WHEAT AND FEED.

Leather, Rubber and Cotton Belting, Smut Machines, Purifiers and everything belonging to a Flour Mill furnished at Lowest Market Prices. For Circulars, Prices and Full Particulars, address the Manufacturer,

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## UNION STONE CO., BOSTON, MASS.

### PATENT MILLSTONE CEMENT.

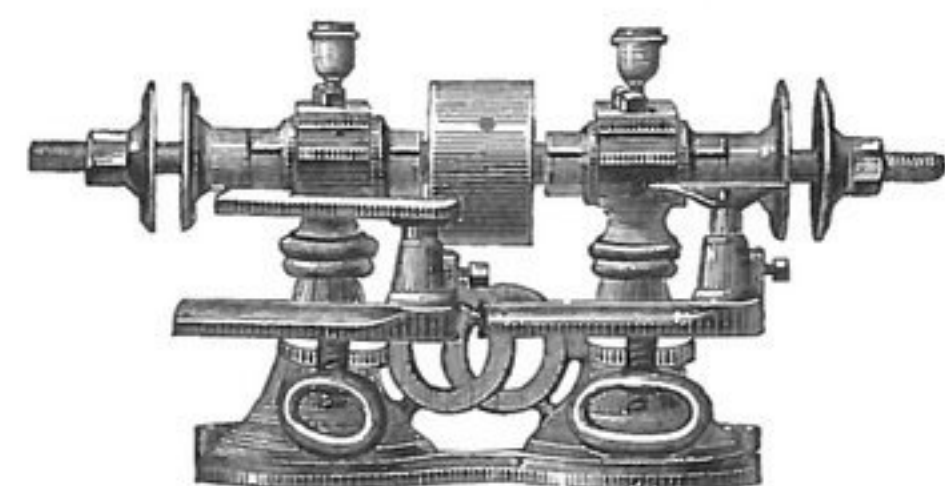
Invaluable to Millers for Repairing and Filling the Joints,

This is a new article of manufacture, and is greatly superior to the preparations now in common use, containing nothing of a poisonous nature. It has the nature and attains the hardness of a part of the Stone, and assists in grinding. Good Millstones are now in use, composed of miller's use, it is put up in cases of two sizes. Price per case: Small, \$3.00; Large, \$5.00. Otherwise we shall send C. O. D. by Express, collecting for return of the money. For manufacturers, the Furrows and



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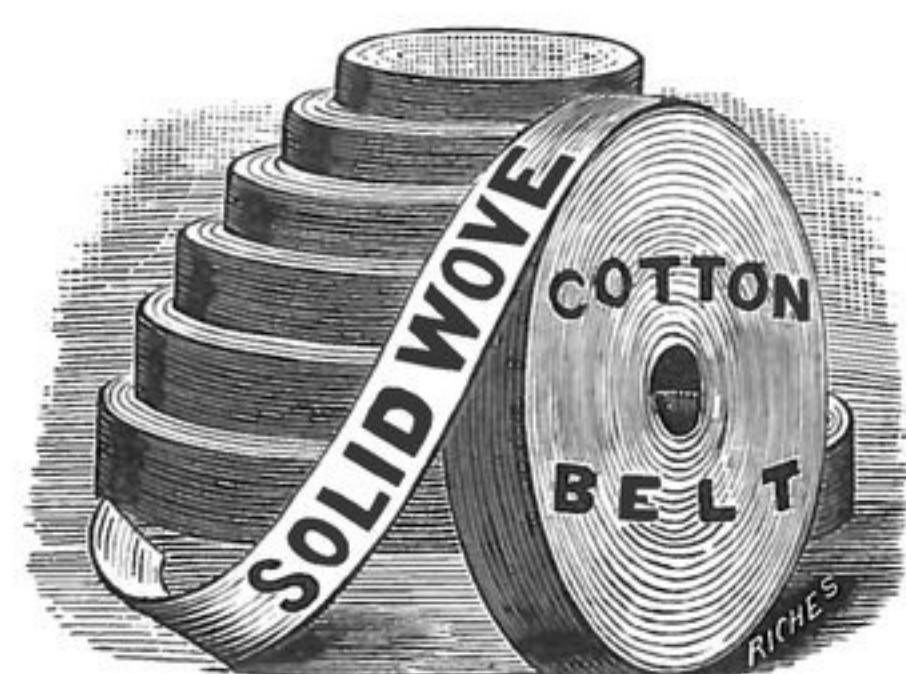
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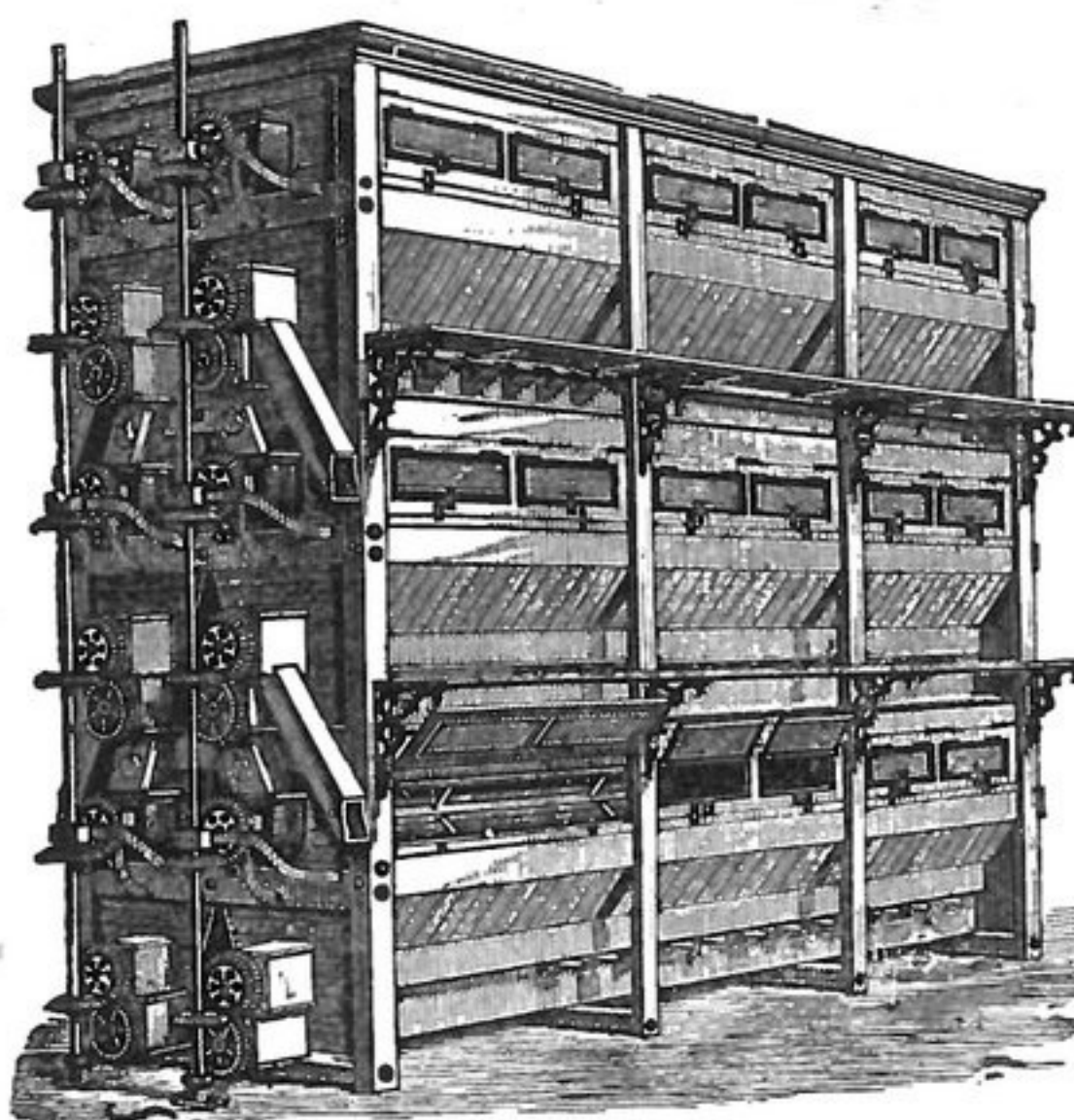
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